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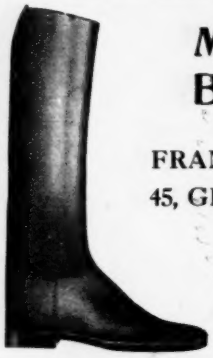

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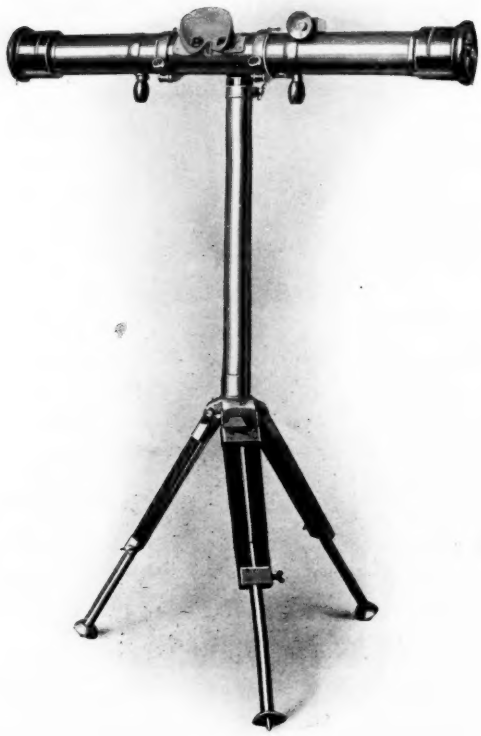

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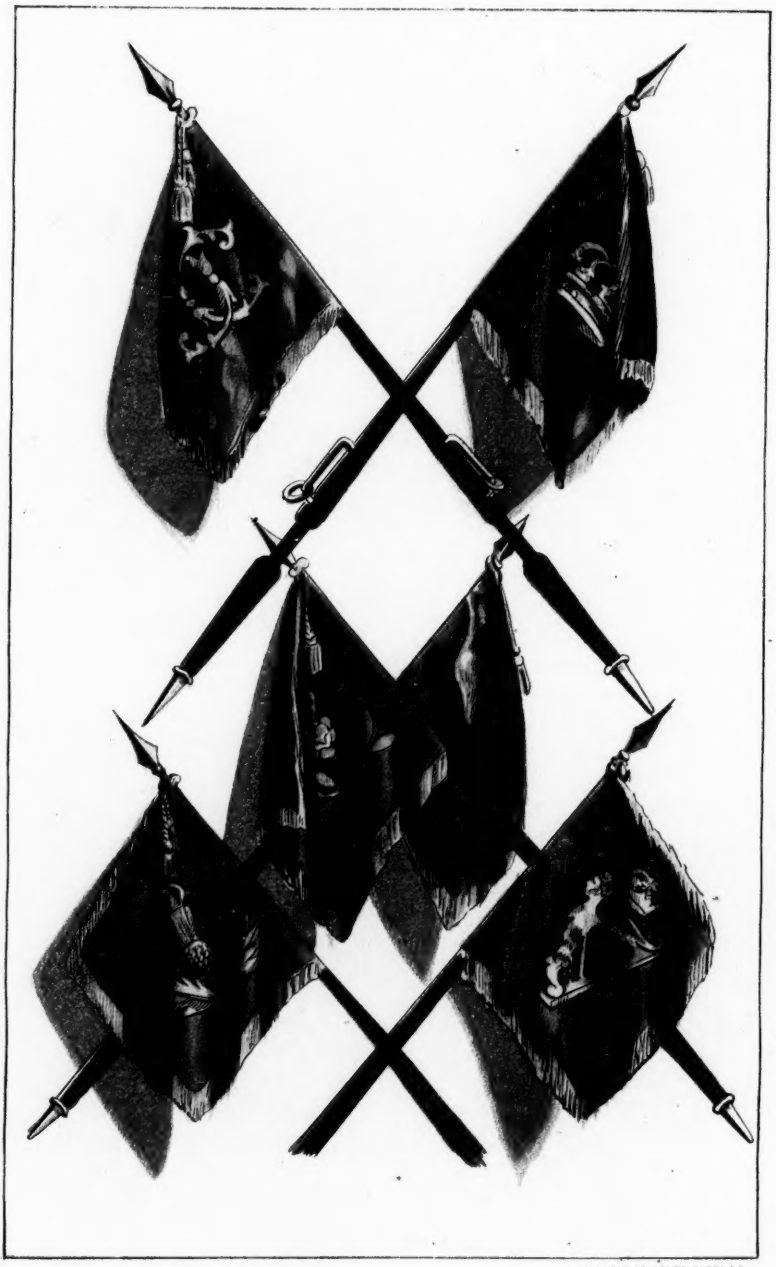
ANNIESLAND,
GLASGOW.

Troop Standards of the Royal Horse Guards (Blue) 1684.



C. E. W. Fecit, 1891.

Colonel's Troop.
First Troop.
Second Troop.
The King's Troop.
Major's Troop.
Fourth Troop.

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THE JOURNAL
OF THE
ROYAL UNITED SERVICE INSTITUTION.

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[Authors alone are responsible for the contents of their respective Papers.]

SECRETARY'S NOTES.

I. NEW MEMBERS.

The following officers joined the Institution during the month of June:—

Lieutenant J. H. Woodbridge, R.N.
Captain R. F. S. Grant, D.S.O., Rifle Brigade.
Major A. Pearse, R.A.M.C.
Lieutenant G. H. MacCaw, 17th Lancers.
Captain G. F. Broadrick, Border Regiment.
Captain E. B. Ferrers, Scottish Rifles.
Lieutenant R. C. Mason, R.F.A. (T.F.)
Lieutenant A. H. Perrott, Royal Berkshire Regiment.
Captain E. C. Holden, R.E. (T.F.)
Captain J. B. Deane, late Scots Guards.
Captain J. N. Harrison, late R.M.L.I.
Lieutenant Hon. M. A. Wingfield, Rifle Brigade.
Major F. B. McCrea, late 8th Regiment.
Captain G. N. Thompson, Indian Army.
Lieut.-Colonel T. A. Colfox, Dorset Yeomanry.
Lieutenant E. H. M. O'Farrell, Royal Irish Fusiliers.
Major H. H. Houldsworth, 4th Bn. Argyll and Sutherland Highlanders.
Lieutenant J. J. B. Cole, Rifle Brigade.
Captain H. B. Galloway, late Seaforth Highlanders.
Captain O. H. L. Nicholson, D.S.O., West Yorkshire Regiment.
Commander T. F. T. Michell, R.N.
Second Lieutenant V. C. Davies, R.F.A. (S.R.)
Second Lieutenant R. V. Montgomery, Somersetshire Light Infantry.
Lieut.-Colonel The Earl of Radnor, 4th Bn. Wiltshire Regiment.
Lieut.-Colonel M. B. Burnand, 3rd Bn. Suffolk Regiment.
Gentleman Cadet G. Bignell, R.M.C., Sandhurst.

II. MEMBERSHIP.

During the first half of the year 1910, the number of officers who joined the Institution amounted to 167. The various branches were represented as follows:—

Regular Army	103
Royal Navy	24
Territorial Force (including Yeomanry)	17
Special Reserve	10
Royal Marines	9
Indian and Colonial Volunteers	4
	167

III. THE ASSISTANT SECRETARYSHIP.

Captain B. E. Sargeaunt, having been appointed Secretary and Clerk to the Council of the Government of the Isle of Man, the Council have appointed Mr. A. N. A. Pinhey, late Lieutenant, 17th Middlesex Rifle Volunteers, and a member of the Institution, in his stead. The Council desire to place on record the excellent services rendered by the late Assistant Secretary during the twelve years he filled that post.

IV. ANNUAL CLEANING.

The building will be closed for cleaning purposes from 15th August to 31st August inclusive. The Museum will be open as usual during the period.

V. ADDITIONS TO THE MUSEUM.

(6117) Shako and Shoulder-belt Plates of the 81st Regiment of the pattern worn in 1842, formerly belonging to Colonel W. B. Browne (1842-1882).—*Given by Mrs. Browne.*

(6118) Shako Plate of the 76th Regiment.
Given by Godfrey Faussett, Esq.

(6119) A Black Dervish Flag found in the house of the Khalifa at Omdurman, 1898. The Flag was known as "The Banner of the Devil," and was used at Rhamadan.
Given by Captain C. J. Clerk, late 21st Lancers.

(6121) A Water-colour Sketch of General Sir Hope Grant, G.C.B., executed by Lieut.-Colonel H. Hope Crealock, in China, 1860.

(6122) A Print in Colours: "The Hussars, 1846," from a picture by Michael Angelo Hayes.

(6123) Helmet Plate of the 81st Regiment worn up to 1881.
Given by T. S. Kerans, Esq., late 81st Regiment.

(6124) Shako with Green Plume of the 51st King's Own Yorkshire Light Infantry, worn up to 1878. The green plume was abolished in 1873 and a green ball substituted.
Given by Lieut.-Colonel J. G. Adamson, late 51st Light Infantry.

REQUISITIONS IN WAR.

By Major A. R. CROFTON ATKINS, Chief Instructor, Army Service Corps Training Establishment.

On Wednesday, 23rd March, 1910.

Colonel Sir E. W. D. WARD, K.C.B., K.C.V.O., Secretary of the War Office, in the Chair.

INTRODUCTION.[1]

THE French supply officer's *Vade Mecum* contains the following passage: "So complex and important is this question of requisitions that no one would have the presumption to attempt to treat it thoroughly in a simple note."

This is so obviously true that in the remarks I am privileged to make this afternoon nothing further will be attempted than a brief consideration of some of the more important landmarks of the subject.

It is not possible, moreover, in the time available to adduce anything like elaborate argument in support of my contentions, and these contentions, such as they are, will be offered rather as suggestions than as dogma. Nevertheless, it is not my desire to evade or even disarm criticism: on the contrary, I court it—for the free discussion of this, in our service, embryonic subject is essential to its development.

Since supplies must form the vast majority of articles requisitioned in war, the question will be discussed from a "Supplies" standpoint. It is considered that a system which is found suitable for the requisitioning of supplies will be found adaptable to the requisitioning of anything else.

SCHEME OF THE LECTURE.

Proceeding now to the discussion of the subject, I propose to confine myself to the following enquiry: Are our existing preparatory measures likely to ensure an efficient system of requisitioning in the Field, and if not, in what respects do they need modification?

In attempting to answer this question, however imperfectly, it is necessary first of all to have a clear appreciation of what these preparations amount to and how they have been arrived at.

As is well known, it is only recently that we in this country have turned our attention at all to the problem of subsisting troops on local resources—the problem of living on the country.

[1] The following abbreviations have been used: D. of S. (Director of Supplies); L. of C. (Lines of Communication); T. and S. (Transport and Supply).

a problem, indisputably, of the first importance tactically and strategically as well as from the purely administrative point of view.

Our curious indifference to this problem in the past may perhaps be traced partly to the general apathy that until recently has pervaded all branches of war administration, and partly to the character of the warfare in which we have engaged, practically ever since Napoleonic times. But from whatever cause this indifference has proceeded, it can certainly not be attributable to want of precept and example. Germany has maintained a systematic study of this method of subsistence ever since she abandoned her effete magazine system after 1806; with what remarkable result in the war of 1870 is a matter of common knowledge. France, although she did not so seriously revive the question until after 1870, has since devoted the closest attention to it, and all foreign publications of any value have been translated into French. There exists, in addition, a mass of other Continental literature on the subject, and eminent foreign soldiers have constantly dilated on its importance. Clausewitz long since warned us that no State which relied solely on its organized reserves could dare to oppose another which made use of the country in addition; one of our own countrymen, Furse, who for an Englishman made quite an exceptional study of military administration, wrote in 1894 to this effect: "If," he said, "our officers believe that they will be able to inaugurate a system of requisitioning without any previous study, and expect to carry it out without any well-defined regulations, we shall have to make ample excuse for the soldier if, in order not to starve, he occasionally resorts to pillage"; and he goes on to remind us that during the last Franco-German war, living on the invaded territory was not the inspiration of the moment: on the contrary, it was part of the organization for war, *understood by every officer*, and backed up by well-defined rules and regulations.

Yet in spite of example and warning, it cannot be denied that we entered upon our last war entirely unprovided with any kind of *system* for utilizing the local resources. Fortunately, owing to the exceptional conditions obtaining in South Africa, and to the untiring energy and devotion of our Supply Service, our want of preparation did not, save in a few instances, react upon the troops, though it certainly did both upon the inhabitants and upon the public purse.

Now reforms of some kind being the natural corollary of all wars, in the programme of reformation that followed the operations in South Africa a place was at last assigned to the consideration of requisitioning. It is immaterial whether the innovation was due to the initiative of the Staff or to "financial representations," the subject was at length to be considered and to be legislated for.

The Army at large was not aware of this fact till some four years after the war, when a set of instructions entitled

"Instructions for the Requisitioning of Supplies, etc.," were issued with Army Orders of February, 1907. More than two years later—namely, in the summer of last year—another set of instructions appeared in Field Service Regulations, Part 2, thus definitely incorporating the subject in our war organization.

In connection with these two sets of instructions, it is noteworthy that the details to a great extent preceded the general principles, for the Army Order of 1907 enters into considerable detail, especially from the account standpoint, while the Field Service Regulations are professedly concerned with general principles only.

I had omitted to mention that subsequent to the appearance of Field Service Regulations, Part 2, some additional instructions on billeting (which, of course, is a form of requisitioning) were published in the Supply Manual (War).

Now these three publications undoubtedly are of the greatest value, and must have been nothing short of a revelation to an army completely innocent of the particular subject with which they profess to deal. Before speculating as to whether they are likely to meet all the requirements of war, it will be convenient to give a short summary of their principal points.

Taken together, the Regulations amount to this:—

(1) The resources of the country are to be utilised to the utmost, and always with economy and foresight.

(2) At the commencement of hostilities the General Staff will furnish full information regarding the resources of the country and their distribution, density of population, local administrative system, etc.

(3) Requisitions will usually be carried out by commissioned officers of the Service or Department concerned, through the local civil authorities. Direct contact between troops and inhabitants is to be avoided, but when requisitions have to be made without the intervention of the civil authorities the requisitioning officers will be accompanied by a suitable foraging party.

(4) Definite requisitioning areas will be allotted to Divisions.

(5) Scales of prices for all articles will be fixed, and the quantity of food to be left in possession of the inhabitants will be laid down.

Then as regards the execution of the service the regulations direct that

(6) Whenever possible, supply officers of divisions will be sent on with Cavalry or Mounted Brigades to investigate the resources of the country ahead of the main body, and if possible, to collect supplies

at suitable points. These officers will report to the Q.M.G.'s Staff Officer of their formation, who will furnish them with full instructions regarding the neighbourhood in which they are to work, the transport to be taken, and articles to be collected.

Very exact and detailed instructions are also given regarding the forms to be used, the method of payment or acknowledgment, and the mode of accounting for requisitioned stores.

This is substantially an outline of the regulations. Their publication has excited widespread interest among those who think; they have opened a new line of thought; they have focussed our vision on a definite though distant object.

And it is high time we set out for that distant object, for it cannot be doubted that if we should find ourselves campaigning "in a civilised country with a temperate climate"—to borrow the quaint phraseology of our War Establishments—with Staff, Supply Service, and troops themselves not thoroughly appreciating the necessity nor understanding the art of living on the country, then (as the French know and as the Germans know) we shall be deficient in the greatest factor for mobility. And we might go a step further and ask ourselves whether war on the Continent could be prosecuted with any chance of success unless the resources of the theatre are effectively exploited.[1]

In passing now to the consideration of the adequacy of our preparations for requisitioning, I wish to disclaim all intention of criticising the regulations in any carping spirit. Nothing is further from my thoughts, for indeed we owe them a large debt of gratitude. But I *am* going to suggest that we want not only all the information that the regulations have to offer us, but a good deal more in addition.

Now with certain exceptions—notably those contained in the Army Order of February, 1907—the regulations do not go much beyond the statement of general principles. Clearly such books as the Field Service Regulations cannot go into long-winded explanations of the principles they enjoin. At the same time, when we consider the almost universal want of knowledge that prevails on the subject we are discussing, it is evident that bare general principles alone will hardly suffice. The chief reason for this is that whereas most of our war regulations are evolutionary in character, these particular regulations are entire innovations, and fall upon absolutely fallow ground. We have not hitherto been accustomed to think in terms of requisitioning, consequently it is not surprising if we find that we have not the necessary knowledge to follow these principles very far in their application. My contention, therefore, is that in so far

[1] To take a single example: operations in winter would be well-nigh impossible without billeting.

as the regulations represent our preparations for requisitioning in war, they need amplification, and in taking a few examples to illustrate the point, I will also venture to make one or two suggestions which in my humble opinion would, if adopted, improve our position.

Statistics.

I will first allude briefly to the question of statistics, because before we can effectively apply any system of requisitioning, or indeed form any opinion as to the measure of reliance we can place in the resources of any locality, we must be in possession of properly compiled statistical data.

At present all we know officially about statistics is contained in the Army Order of February, 1907. Certain arbitrary rules for making rough calculations are indeed laid down in the Field Service Regulations,[1] but the word "statistics" is not mentioned therein.

Paragraph 5, "Instructions for Requisitioning," lays down that at the commencement of hostilities the General Staff will furnish information respecting the resources of the contemplated theatre of operations, and then it goes on to detail the headings under which the information will be given.

In connection with this paragraph I think we should realise two points: First, that the compilation of this information is by no means an easy matter, and, secondly, that if the information is only to be available at the commencement of hostilities a good deal of its value will be discounted.

As regards the compilation of statistics, it is plain that in order to draw up a reliable report on the resources of a country, the previous study of economic geography and statistical method is essential: a bare collection of a series of statistics regarding density of population, harvests, granaries, etc., is by no means sufficient. These facts must be presented in their proper and *relative* values, and to do this requires a trained intelligence.

The scope of economic geography is very large, and broadly involves considerations of world position, physical features, climate and production. The whole, when systematically considered, gives valuable results, both as regards regions well known, where facts can easily be got at, and also extends to comparatively unknown regions, where deductions from the broad principles can only be made—where we argue from wind and rainfall to vegetation, thence to population, and so infer production. The uses of economic geography of course not only apply to considerations of food resources, but also to communications, medical questions, etc. To attempt to describe its great importance is beyond the scope of this lecture, but I think it is regrettable that questions of maintenance are

[1] Field Service Regulations, Part II., Sec. 35—2, 3, 4 and 5.

scarcely touched upon in the few books we have on military geography. The facts necessary for the compilation of administrative reports on most countries are available, but their presentation in a handy form for military students has not yet been undertaken.

Then as regards the second point, apparently it is intended that the statistical information collected by the General Staff should remain confidential until the outbreak of war. The necessity for this secrecy is not at all clear, and it cannot be doubted that such a course is a severe handicap to the training of Staff and Supply Officers in peace. "When war breaks out the time for preparation is past." Imagine the state of mind of a newly-appointed D. of S. in the Field on being suddenly deluged with a rain of statistics, which he and all his subordinates should in fact have been studying for years past, as an essential preparation for the work they have to do.

No. Economic statistics, not only of all probable theatres of war, but of all countries which may be counted on as sources of supply—and this for us practically means the whole world—should be *continuously* studied in peace, not only by those charged with their production—viz., the General Staff—but by those who have to use them, viz., the Administrative Staff and the Supply Service. Figures, again, however accurate, are liable to mislead if ignorantly used, and a knowledge of economic geography is equally necessary for the users.

It is difficult to see what harm could result in publishing statistics concerning any foreign country,[1] though perhaps some may think that it is no part of our business to present foreigners with a statistical survey of this country and her colonies.

Before leaving the subject of statistics, it might be noticed that the regulations give no directions as to their use and application. As regards their use, we may expect them to be helpful (*a*) in the selection (when a choice exists) of a favourable line of operations; (*b*) in determining the supply policy at the outset of a campaign; (*c*) in gauging the supply situation and arriving at broad decisions during the course of the war; (*d*) in the allotment of billeting and requisitioning areas; and, finally, as a general guide when in pursuit of our daily bread. But in this last connection we must be careful not to overrate their value, for statistics, however reliable, will hardly ever indicate the exact position of the food. So that after the necessary deductions have been made, due to the condition of affairs prevailing at the moment—*e.g.*, inroads by enemy, failure of imports, concealment by inhabitants, etc.—we must then test our statistics and actually localise the food by systematic supply reconnaissance.

[1] If it be considered that the publication of statistics, say, of Montenegro, might give offence at Belgrade, why should we not allay suspicion by commencing with some distant country, say Peru, and gradually reach the study of the civilised countries with the temperate climates by easy stages?

Then as regards the method of applying statistics to a given situation, this, of course, merely involves a comparison between requirements and resources, and, it may be said, is merely a simple arithmetical calculation. Nevertheless, the fact remains that many officers do not understand how to apply them, and whatever method is advocated should, I think, be officially laid down somewhere for general information.

The Organization of the Service.

The next point which claims attention is the organization of the requisitioning services, and it is important in that it raises the question: "What machinery is actually available for giving effect to the new regulations?"

Now, so far as concerns accounts, registration and payment of claims, a well thought-out and elaborate system is undoubtedly in vogue, and all we need for its completion is to fix war establishments for the various offices, etc. But for the executive work in connection with requisitioning, for the actual procuring of the articles, which is, after all, the main thing, *no special machinery seems to have been contemplated,* and the duty is at present tacked on as apparently a trifling addition to the normal duties of the existing Supply Establishments.

In interpreting the intentions of the regulations on the point, we have two principal statements to guide us. The first is that, whenever possible, supply officers of divisions or their representatives will be sent on with cavalry or mounted brigades to investigate the resources of the country ahead of the main body, and, if possible, to collect supplies at suitable points; the second, that the supply units of the army serve two purposes:—First, they provide the means of collecting and distributing local resources; and, secondly, they form the flexible links connecting the army with the L. of C.

This means that the whole onus of supply intelligence, requisitioning, collection and distribution, and handling of requisitioned supplies is thrown on the existing *personnel* of the columns and parks in addition to their other duties. I may be wrong, but my own opinion is, that at the best they will only be able to cope with the requisitioning to a very limited extent, and for these reasons:—

1. The existing *personnel* is not strong enough, and supply officers must be in constant touch with the commanders of their formations. All experience, moreover, goes to show that supply officers are already taxed to the utmost with their normal duties of collection, issue, and replacement, and if they are taken away for duty in the front, the supply from the rear must suffer, and there can be no economy in robbing Peter to pay Paul.

2. The normal position of many of the supply units, so far in rear, limits their radius of action, and will practically restrict requisitioning to the immediate vicinity of the flanks.

3. It is a physical impossibility for them to go far afield to requisition and maintain an uninterrupted connection with

the L. of C. at one and the same time, as the regulations suggest. As it is, they are notoriously slow moving units, but even if they possessed the mobility of horse artillery, they could hardly be expected to be in two places at once.

Now in expressing this doubt as to the adequacy of the machinery for requisitioning, I do not wish to be misunderstood. It is not suggested that the existing supply units cannot make considerable use of the resources of the country when their formations are at rest, and even do a certain amount of requisitioning in their immediate neighbourhood when on the march; but I do contend that their radius of action will be too limited to enable them to extend their operations sufficiently far afield to get the *best results* out of the country. In other words, if everything but the very local requisitioning is left entirely to these units, living on the country will, to a great extent, degenerate into another form of supply from the rear, and its main advantage—namely, the power of collection in front of the main bodies, and the increased mobility and tactical freedom conferred by that power—will be lost.

Here it may be remarked that, owing to our somewhat narrow conception of supply in the field, we are, perhaps, slow to even admit, much less advocate, the feasibility of collection in advance of the moving troops. A great many soldiers still connect the supply of an army solely with lumbering trains, and I frequently hear it said that such procedure as collection in advance would be impracticable, unsafe, would not receive the sanction of commanders. This is certainly not the conception of the French or Germans, who regard it as possible up to within actual concentration for battle, and who are prepared to accept all average risks; nor will any but the most timid commander refuse to avail himself of this instrument of mobility unless it is clear that by so doing he will be literally giving the military situation away. Naturally, however, when in *proximity* to the enemy, this kind of work cannot be undertaken without the close co-operation of the General Staff, as the military situation of the moment has to be most carefully consulted.

A further objection to throwing the whole onus of requisitioning upon the T. & S. columns and parks is that a great deal of the work will, as a direct consequence, devolve upon the troops themselves. This, we know, must often be the case with scouting cavalry and isolated detachments; but the more it can be avoided on a large scale the better, because, no matter how good the discipline and the supervision, it is likely to degenerate into indiscriminate foraging with all its attendant evils; it will also inevitably lead to waste, and we know that the exercise of due economy is the essence of successfully living on the country. Apart from this, it is wrong in principle to saddle the troops with extensive responsibility in any matter of supply. It is not their legitimate work, and since they cannot give their whole attention to it, it is bound to break down sooner or later.

We have an excellent example of this in the late Russo-Japanese War, where at the beginning of the campaign a great deal was left to the Russian troops, but as the war progressed, and the business of fighting became more continuous, and local supplies became scarcer, the troops could not cope with the supply duties, and ultimately the Intendance were forced to assume more of their legitimate responsibility.

The Necessity for a Separate Requisitioning Personnel.

As an illustration of the necessity of having a properly organized requisitioning *personnel*, I venture to quote the well-known instance of the supply situation in the neighbourhood of Paardeburg. Here the animals were practically starving, and it was afterwards discovered that the existence of numbers of farms in the vicinity containing large amounts of forage had been overlooked. This could not have happened if we had been in possession of a good statistical survey of the locality, and if a well-understood system of requisitioning had been in force. With half the Supply Park destroyed at the Riet River, the A.S.C. (which had hardly had time to rally from its latest re-organization) could not for the moment meet the demands. The result is well known, and directly or indirectly entailed the remounting of the Cavalry Division and the immobility of Lord Roberts' Army for over a month after the occupation of Bloemfontein. It was lucky matters were no worse, but in the light of after knowledge it is not improbable that an efficient system of supply intelligence and requisitioning would have ameliorated, if not saved, the situation.

The real fact is that although we now possess the nucleus of workable instructions for requisitioning, yet so far as concerns an adequate machinery for giving effect to them, we are no better off than we were in the days of Paardeburg or the Crimea; and I venture, therefore, to assert that the requisitioning of food supplies is beyond all doubt of sufficient importance to merit its being entrusted to a special *personnel* definitely organized for that purpose. In suggesting the details of an organization it is necessary first to differentiate between Local Requisitioning and General Requisitioning, an important distinction which our regulations do not at present recognise.

[1]Although requisitioning areas are allotted to units, an army *on the march* is not subsisted from the general resources of the country it traverses, but only from those of the immediate locality in which it halts. Therefore, the extent of the zone of the bivouacs or billets must be considered.

In general, the order of the halt is much the same in form as the order of the march, and it may be assumed that the troops cannot extend laterally more than a few miles either side of the main line of march. *Local requisitions* will, there-

[1] "The Provisioning of the Modern Army in the Field."—*Sharpe.*

fore, be confined, roughly, to the area represented by the length of the line of march or the extent of the cantonments, multiplied by the distance to which the troops can extend laterally.

It may be assumed that the whole of the country along the line of march will be drawn upon for the immediate needs of the Division, and so to obtain supplies for stocking advance depots, field depots, etc., wider requisitioning must be resorted to. This will be *General Requisitioning*, and in connection with it I might observe that the German Regulations advocate the sudden appearance of requisitioning parties in remote districts, 60 or more miles away from the main bodies of troops.

Now for this wide requisitioning it is clear that special *personnel* must be employed, for obviously Divisional and Brigade Supply Officers could not be sent away from their units for days together. For local requisitioning the need for a separate *personnel* may not at first sight be so apparent, but a moment's reflection should convince us of its importance. To be really effective the collection of food or the requisitioning of billets must be carried out, say, at least a day's march in front of the main body, but if the work is entrusted to the T. and S. Columns the time available for the collection of the local resources will depend very much on the hour of arrival in camp or bivouac and the hour of march next day; and it must not be forgotten that the T. and S. Column will have then already carried out much the same length of march as the other troops, before they start on the work of collection. Consequently, I think it will be admitted that a separate body is as much needed for local requisitioning as for general.

I would advocate the inclusion in War Establishments of small Mobile Units of Supply, or Exploiting Detachments, consisting of an officer (not under the rank of captain) and, say, 12 N.C.O.'s and men. Such a unit would be charged with :—

Supply Intelligence,
Requisitioning,
Purchasing, and the levying of contributions,
The formation of Field Depôts in front of the main bodies.

Its non-commissioned *personnel* should be specially selected for their activity, intelligence and resource—one instinctively knows the type of man suited for this class of work—they should be ear-marked in the Army Service Corps Mobilisation Scheme. and special attention should be paid to their training in supply reconnaissance duties and map-reading in peace. The training of officers will be dealt with separately later on.

As regards the distribution of these detachments, it should be premised that when areas have once been allotted to units, local requisitioning will be under divisional control, and general requisitioning will be under army or general control.

So taking first the Independent Cavalry, I would attach one mobile unit to each Brigade and Divisional Troops, whose duties would approximately be:

(a) To carry out a rapid supply reconnaissance in front of the main bodies, and prevent the removal[1] of supplies from the country.

(b) To help as far as possible in the supply of the advanced squadrons on the march.[2]

(c) To locate supplies for either the concentrated cavalry or for their T. and S. columns, if required.

(d) To systematically report (through the proper channel)[3] all surplus supplies to D. of S. at Army Headquarters, and keep him informed as to the supply situation in front.[4]

(e) To form Field Depôts in advance, as D. of S. might order, in consultation with the General Staff.[5]

In addition these detachments should locate the supplies for the Protective Cavalry. They might also take over in the first instance supplies and stock captured from the enemy, and carry out any necessary destructions of supplies during a retreat.

Immediately in rear of the protective cavalry three or more Mobile Units of Supply for wide requisitioning to the flanks should be available, and when the independent cavalry is not covering the immediate front these units could locate the supplies for the T. and S. columns of the protective cavalry.

The whole of these detachments should be classed under the heading of "General Requisitioning *Personnel*," and should be under the control of the Director of Supplies at Army or General Headquarters. They should be provided with motors or motor cycles.

Then for Local Requisitioning (to provide for the division's immediate wants), for each division I would allot two Mobile Units of Supply. In general, they should work a day in advance, so as to have everything ready for the division when it came up; but if military considerations did not admit of this,

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[1] As early as possible in a campaign it is important to publish a stringent proclamation forbidding under severe penalties the export of food supplies by the inhabitants of occupied territory.

[2] Of course, they can only assist. Isolated squadrons must shift for themselves in the main.

[3] This information should be also communicated to D. of S. direct at the same time; but it must not be forgotten that the existence of large quantities of supplies at certain points might be a very important General Staff question.

[4] D. of S. must know this to enable him to advise on the subject of allotment of requisitioning areas.

[5] The position of Field Depôts so far ahead would usually involve matters of policy, and so become largely a General Staff question.

they could move with the advance guard and exploit the divisional requisitioning area on either flank. They would be under the immediate orders of the Senior Supply Officer. Their duties would be:—

a. To tap all sources within the area allotted to the division and provide for its immediate wants.

b. To accumulate all surpluses at central points for T. and S. columns and parks, if required.

c. To form Field Depôts, if required, when the division halts.

d. To report all surpluses (through the proper channel) to the L. of C.

In addition, these units could report upon the billeting facilities a day's march ahead of the Division, and help to clear up the billeting situation for the Q.M.G.'s Staff. As their sphere of action is more limited, they might work on bicycles if motors were not available; but, if possible, a motor should be provided for the officer in command of the detachment. Some means of co-operation with the General Requisitioning detachments would have to be devised, because on their reports the efficiency of the local requisitioning would largely depend.

In both forms of requisitioning I need not mention that local transport would usually have to be employed.

Finally, a further allotment, according to circumstances, could be made to the L. of C., the units working widely to the flanks under the orders of the Deputy Director of Supplies.

Thus for an army of three divisions the total *personnel* required (exclusive of L. of C.) would be:—

	Officers.	Other ranks.
Independent Cavalry (say, 3 Brigades)	3	36
Behind the Protective Cavalry	3	36
With three Divisions	6	72
Total	12	144

To provide these small numbers would not mean any increase in establishment. The increased efficiency of the Supply Service in front would relieve the strain in rear, and enable a corresponding reduction to be made in the Depôt Units on the Line.

No doubt this outlined organization could easily be improved on—that is merely a matter of discussion—but some kind of independent requisitioning organization is, to my mind, indispensable.

Foresight in anticipating the wants of the troops is the keynote of all successful supply work in war. In living on the country, foresight is especially important.

Time is an essential factor in all these transactions, since if the local produce cannot be collected in time to *meet* the troops, and has eventually to be dragged along after them, as must certainly be the case if the work is left to the T. and S. columns, half the advantage of living on the country is lost.

It must not be forgotten that a locality may be comparatively rich in food, and yet little may be available for immediate use. Cattle may have to be collected over extensive areas, hay cut out of stack, crops dug, wheat ground, oats and beans threshed, etc. Similarly, in the shops coffee may be in the berry; rice, sugar, etc., without the necessary sacks or packages for conveyance. All this means time, and that is largely why I contend that our existing machinery is inadequate, and that we must have an unfettered *personnel* to work always in advance of the main bodies, whenever the military situation permits.

To indicate generally how these small detachments should work, those for General Requisitioning would be allotted areas or sent on special missions. They would receive their orders from the D. of S. or his representatives, possibly through the commander of the force to which they were temporarily attached.[1] The best possible arrangements should be made to ensure the early transmission of their reports to D. of S.

In the case of Divisional Detachments, their orders will issue from the Senior Supply Officer, who will, of course, take his instructions from the Q.M.G.'s Staff Officer, who in his turn will be guided by the information already obtained by the advanced detachments and communicated to Divisional Commanders by the D. of S.

In a general way the officer in charge of the Mobile Unit of Supply would distribute his *personnel* over the day's area for the purpose of marking down the stuff, and then arrange to visit each place himself for the purpose of delivering the requisition, leaving one or more of his people behind to see it carried out. He would indicate the position that night where his *personnel* would rejoin him for work the next day.

When requisitioning for the daily needs of a force on the move, it will seldom be possible for the requisitioning officer to personally give requisition receipt notes, because he will not be able to wait till the completion of the service. He would, therefore, have to entrust the notes, made out in original and duplicate, to the representative he leaves behind,[2] who would hand them to the owner of the goods and to the supply officer receiving the goods respectively; the latter could make any amendments to the notes found necessary on checking delivery.

Field Depôts.

In connection with the organization of the requisitioning services, I might mention the subject of Field Depôts, which

[1] This may be necessary for tactical reasons.

[2] This procedure would necessitate a slight alteration to the Army Orders of February, 1907.

will usually be filled up from the local resources of the country.[1] At present the Regulations provide for no establishments for this service, and doubtless for the Field Depôts required during the strategical concentration sufficient *personnel* would readily be obtainable either from the L. of C. Establishments or from the Field Supply Units. But when the forward movement has commenced, and our available supply organization has stretched itself out, where is the *personnel* to come from? On some occasions Brigade and Divisional Troops Supply Detachments might be made available, as, for example, when a force was halted for any length of time, but usually this *personnel* would be fully occupied, and since the Field Depôt plays such an important rôle, when troops are living on the country, some normal means of manning it should be recognised.

For obvious reasons there is a difficulty in laying down any fixed establishment, nor, having regard to the uncertainty as to when and where their services might be required, could separate establishments perhaps be justified. It is, therefore, suggested that the service of forming these depôts should be undertaken by the Mobile Units of Supply, who would thus be only completing the duty they had already begun by requisitioning the supplies.

The Training of Requisitioning Officers.

The next point I would briefly allude to is the technical training of officers.

As requisitioning is the principal means of exploiting the resources of a territory, it is clear that the efficient training of the officers entrusted with the service is a matter of the first importance. Yet our regulations give us little indication of the lines on which this training should proceed.

I have already mentioned the necessity for the study of statistics and economic geography. To these must obviously be added a knowledge of the language of the country, its commercial conditions, its internal communications and its system of Local Government. The last is perhaps the most important, since no effective co-operation with the civil authorities is possible without it, and on this co-operation, whether voluntary or enforced, depends in a large measure not only the success of requisitioning,[2] but also the very distinction between equitable requisitioning and foraging—that other name for the legalised spoliation of the individual, which breeds hatred and malice and all uncharitableness.

In addition to the training proposed, the Requisitioning Officer should acquire a much more extensive practice in supply

[1] Though not necessarily, be it noted, from the resources of the immediate locality.

[2] It goes without saying that the more highly trained the requisitioning officer, the less will he be dependent on the civil authorities.

reconnaissance duties than the Army Service Corps officer at present gets; and it is imperative that selected supply officers should be given the opportunity of attending foreign manœuvres and operations to study foreign systems.[1]

The translation of foreign literature dealing with subsistence on local resources should also be officially undertaken as essential to the training of supply officers, and I suggest that our various regulations on the subject might with advantage be collated in one book. This would at any rate ensure agreement in matters of detail.

Finally, it seems almost superfluous to insist that Requisitioning Officers will be useless unless they possess initiative and are prepared to accept a great deal of responsibility. To this end they should be most carefully selected, and only the most resourceful and reliable ear-marked for the duty. Having selected them, the next best thing is to trust them and support them. Penal clauses in the regulations and commissions of enquiry hovering in the background act as a positive deterrent to the development of that priceless gift in war, the fearless acceptance of responsibility: they may exercise a soothing effect on the public and the press, but it is certain that they will not further the efficiency of this indispensable, if somewhat heroic, method of subsisting troops.

Payment for Requisitioned Supplies.

Before concluding, the question of payment for requisitioned supplies deserves brief notice.

A carefully devised system of settlement and account has already been drawn up with the object of minimising the presentation of fraudulent claims, and at the same time safeguarding the interests of the inhabitants. Furthermore, the regulations enjoin a just and speedy settlement of all claims when once payment has been decided on.

The only point for consideration is whether the system of payment now laid down will prove sufficiently elastic to meet all cases, whether, in fact, the somewhat elaborate procedure for registration, investigation and assessment will not clash with the just and speedy settlement so rightly advocated.

Our present procedure is entirely based on South African experience, and the question arises how far it will necessarily be applicable in a European theatre. South Africa boasted quite an abnormal number of rogues and vagabonds, and it was, moreover, generally difficult to distinguish between friend and foe. If the circumstances of that campaign were repeated, it would no doubt be a wise policy to defer payments until all claims could be carefully checked; nor, with the economic conditions peculiar to that country, would such delay in payment entail particular hardship. Conditions in Western Europe are,

[1] One hardly knows whether to laugh or cry at our Supply Service being totally unrepresented in the Russo-Japanese War.

however, very different, and in the more thickly populated localities a month without payment may mean starvation itself to the inhabitants. Consequently, it seems advisable that our regulations should be extended so as to admit of a wider system of "Cash on Delivery" than that at present contemplated in cases where the inhabitants were prepared to "play the game." The chief difficulties in the way of any cash system seem to be the inconvenience of carrying about money in large quantities, the scarcity of specie that may be expected in a great war, and the difficulty of assessing values, a duty which at present rests with the Requisitioning Office. The first difficulty would not apply to requisitioned supplies coming in to the L. of C., for which payment on delivery should always be made; and in the case of the more advanced requisitioning, officers might be empowered to endorse requisition receipt notes for immediate payment on presentation at an advanced base or to a Field Paymaster, or as an alternative they might pay requisitions by cheque. But it seems to me that the great importance of speedy settlement would fully justify special efforts being made for the provision of sufficient cash. The scarcity of ready money might be overcome by judicious levying of contributions, for which the regulations already provide; and the assessment of values would have to be decentralised from the Central Requisition Office. As the prices of all commodities are fixed and published in orders, there would be no particular difficulty about this, and indeed the man on the spot would seem to be a better judge of values than people who had never seen the articles.

One thing is certain, that whatever arrangements are come to, we must see to it that in our laudable efforts to safeguard the public purse, we do not handicap the success of requisitioning by exasperating the inhabitants with any unnecessary system of deferred payments.

On the policy of payment, I think that even in the enemy's territory we should always pay our requisitions, except when the population are actively hostile. Indeed, it is difficult to see any valid argument against so doing, since if we win we send in the bill to the enemy, and if we lose, the cost of the food will only represent a very small part of the war indemnity this country would be called upon to pay. It is sometimes objected that current payments supply the inhabitants with the sinews of war, and tend to prolong operations, but comparatively small sums of this kind are not the sinews of war, and cannot be organised as an offensive weapon in an occupied country.

The alternative to payment is a policy of severity, and often a combination of both will be found necessary. In the Franco-German War, as a result of a combined policy of payment and the utmost severity when occasion demanded, German troops could usually exist on French soil where French troops starved, "For," argued the distracted French inhabitants, "those Prussians, if we can produce nothing for them, will certainly

hang us, whereas they will pay us well for what we supply. Our brothers will neither pay us nor hang us; let us therefore keep what we have for those Prussians." In reality, these fears were exaggerated, for the Germans never in fact hanged anybody for the mere inability to produce food. Finally, let us remember the words of Von der Goltz: "When there does not appear to be anything left, and force is no longer of avail, money will always procure something."

Conclusion.

In conclusion I would once more emphasize the pressing need for a close and scientific study of "Living on the Country," as the only means by which we can hope to overcome the many difficulties the subject presents, and so elaborate a workable system for war.

Unhappily, it is quite a common notion that this department of supply can readily be improvised, that all requisitioning must necessarily be unjust and merciless, and that since the food must be forthcoming at any cost, brute force is the sole equipment we need. Such views are only useful as bearing witness to the proverbial conservatism of the British Army.

It cannot be too strongly insisted that the *fortiter in re* is no more imperative in this service than the *suaviter in modo*.

True, it will be a question of drawing teeth—no easy job; but the dentist must be *facile princeps*, not "principally forceps."

Requisitioning by the ignorant and untrained must necessarily be barbarous, since without statistical and economic knowledge an equitable distribution of the burden is impossible.

It is idle to labour so obvious a point.

Of course those who have war in their own country must always expect to pay the piper; but with a scientific system administered by a trained *personnel*, the odious war-tax will be levied with the minimum of hardship and oppression.

The new regulations have pointed us the way; it remains for us to follow.

We must organise this system.
We must train this *personnel*.

Brigadier-General H. H. Wilson, C.B., D.S.O. (Commandant Staff College):—Unfortunately I was not present while the lecture was given, but the lecturer kindly sent me an advance copy, which I read with great interest and pleasure. Speaking from the Staff point of view, I think this is a question that affects the Army as a whole and not any one branch of the Army. Our Army is small enough in all conscience, and in order to get full value out of it we must have mobility; and one of the means by which mobility can be secured is a good system of requisitioning. The difficulty of feeding an army from the rear is at all times very great, and in some cases it is almost impossible; but good requisitioning may counterbalance a bad, a faulty, or a mistaken system of drawing on supplies from the rear. Good requisitioning means the setting up of a machinery which

must be devised, worked out, and practised in time of peace, otherwise the requisitioning will not be good. At the present moment, as far as I know, we have no machinery for requisitioning, and therefore if we were to go to war to-morrow we would not, as a matter of hard fact, be able to requisition with any success during the opening phase of a war. Undoubtedly we would learn, but while learning we might lose our opportunities, and all the while our mobility would suffer. I would like to define the mobility of a force as being such that the troops can march to the full limit of their physical powers. Directly you limit the marching powers of a force by either faulty requisitioning or faulty service from the rear, you reduce the mobility of your force. Your food supplies ought to be arranged, either by requisitioning or by service from the rear, in such a manner that you can march your men every day to the full limit of their physical powers. Directly you shorten that distance just by so much you lose the mobility of your force. Obviously if that is so, and if you want extreme mobility, you want a good system of requisitioning. I cannot talk of requisitioning without mentioning one other thing which affects it very much, and that is billeting. In our Army we know nothing at all about billeting, but requisitioning and billeting go together to a great extent. Again, billeting means the power of marching in depth, a thing we know nothing of in our Army; and yet those three things go together to make extreme mobility or something less than extreme mobility. That is all I have to say, except that to my mind the lecturer has brought forward a subject which is of the very first importance to every branch of the service.

Colonel S. SELDEN LONG, A.S.C. (Assist. Director of Supplies):—There is not the slightest doubt, as General Wilson has said, that the lecturer has to-day, I might almost say for the first time if I leave out his lecture to the Staff College, drawn attention in a prominent manner to a subject which is of the very greatest importance. When one considers what one was taught at Sandhurst when many officers present first joined the Army, it is really laughable to think of what was supposed to be supply intelligence in those days—I mean the supply information that was given in road reports and reconnaissance reports. One wrote, for instance, in the corner of one's report: "In the village of Hartley Row there are two bakers' shops," and so on. That was the information that was given, and that is the total amount of supply information that is collected at the present day, however much the Staff may contradict the remark. I have seen many of the Reports on Staff rides from the supply point of view, and I can assure you the information is always the same: "Here there are two bakers' shops." Nothing is said about how many loaves of bread could be baked or whether the shops possessed an oven. The question is of the very greatest importance, and I feel quite certain that what the lecturer advocates and what is really required is some system of supply intelligence in front. Whether it is obtained by the supply branch, or whether it is obtained by officers specially trained, is immaterial to the point; but that it is absolutely necessary to have someone in front to keep the Director of Supplies, who is behind, fully informed, there cannot be the slightest doubt. I simply mention the officer on the Staff who is responsible for the feeding of the Army; but that it is important there should be someone in front to obtain all the information that is so absolutely necessary is beyond question; and until we do have somebody in front to do the supply intelligence and work properly, we can never expect to live on the country.

Colonel F. A. FORTESCUE (late King's Royal Rifle Corps):—As regards the collection of information that should be in possession of the supply officer in front of an army, nowadays, when corn is threshed, it is moved off the ground at once. Wheat is stored at the ports, and it is almost impossible, I think, for military officers to go into a country and find out rapidly what the local supplies are. During a staff ride, for instance, I have had to collect information as to the supplies of food, etc., in particular towns. In one, Chichester, I went to the various butchers, and I found there was at no time on hand more than twenty-four hours' supply for the civil population at the outside; but they assured me that in twelve hours, owing to the system of cold storage, they could get rations for 100,000 men from Southampton. There is a system of obtaining intelligence in regard to supplies adopted by other countries, to which I think attention ought to be directed, namely, they do not trust absolutely to the intelligence collected in peace time by military officers to enable them to rapidly collect supplies in war, but they use their commercial consuls for this purpose. These consuls are so in touch with the whole of the commercial life of the country around that they have facilities for giving the military authorities information as to how particular districts live, what is the nature of and the average amount of supplies to be found in the districts at the various periods of the year. I cannot think that it is possible for any soldier to be sent into a country and, in the space of a visit, to collect the information that would be necessary to enable supply officers rapidly to collect food in front of the army. I may be wrong and the General Staff may correct me, but I think we should turn to our Consular authorities in that respect for information, more detailed in character than that contained in the annual Consular Reports.

Major-General F. T. CLAYTON, C.B.:—The question of what is the most suitable organisation for utilising the local resources of a country is certainly a very difficult one, and one I quite agree with the lecturer and General Wilson, that we should thoroughly study in peace time, in order that the troops may not suffer from the want of proper organisation when an emergency arises, and we have to utilise the local resources to their utmost extent. Perhaps it is owing to all our small wars, or at least the majority of our small wars, in the last century having been conducted practically in countries where we have had perhaps little opportunity of living on the local resources, that it would appear we have fallen behind the times and have not given this very important subject the study which it deserves. There have been occasions, however, in the last thirty years where we have made considerable use of the local resources of the country, both by direct purchase and requisition. I will mention first of all the Egyptian campaign of 1882, when, after the battle of Tel-el-Kebir, the cavalry brigade were ordered at a few hours' notice to advance on Cairo. There was no time and no transport available to take more than sufficient supplies to last for the journey, and when they arrived at Cairo the men and horses subsisted for some considerable time, I think for about a week, on requisitions levied on the town. The same thing occurred in other parts of Egypt during that campaign. Turning to South Africa, we made a very considerable use of the local resources of the country, both as regards supplies and transports. If we had not done so it would have been a very bad thing indeed for the troops and for the ultimate result of the campaign. There are very few, I think, who really realise what was done in South Africa. The whole of our meat supplies, with the

exception of a very small portion of frozen meat, was obtained from local sources, and a large portion of our transport was also obtained in this way; in fact, the whole of the covered ox transport came from local sources. We also obtained a very considerable quantity of forage, both by requisition and by purchase, and I think our worthy Chairman could give us some very interesting experiences of the amount that he requisitioned on the march up to Pretoria with the headquarters of the army. We must also not forget that in the gallant stand our troops made in the defence of Mafeking, Ladysmith and Kimberley, they were fed, to a very great extent, on requisition supplies; at that time not only had the army to feed the troops, but they also had to organise a system to feed the civil populations in those towns; the success of their efforts is now past history, and all I can say is that it reflects the very greatest credit on all those who organised it. I do not think the colossal task that we had to carry out in South Africa has ever been fully realised. Towards the close of the war we were feeding no less than 327,000 men and 265,000 animals, they required about 3,300 tons of food and forage per day, and if we had not utilised the local resources of the country to the very great extent we did we could not have succeeded in our task. There was no hitch and there were very few complaints. If we turn to the Franco-German War of 1871, we find that the German Army investing Paris required only 1,800 tons of food and forage a day compared with the 3,300 tons that we required in South Africa, and yet there were complaints—and many complaints too—with regard to the feeding of the German Army. One writer who studied the subject very closely, Colonel Furse, mentions in his "Provisioning Armies in the Field" that it was with difficulty the soldiers were at times kept from starving, and I think it was not until the end of December, 1871, that the army around Paris received its full rations of meat. In bringing forward the examples that I have done to-day, I think it proves that whatever have been our shortcomings in the way of issuing regulations on the subject of requisitioning, when the occasion has arisen we have made a very considerable use of it with a very fair amount of success. The question of whether the payment for requisitions should be made in cash or deferred payments is one that can only be decided according to the circumstances in each case. In 1871 the Germans used both methods; they sometimes paid in cash and sometimes made deferred payments, and we did exactly the same thing in South Africa. We commenced by paying cash, and it was only due to the hostility of the inhabitants that we had to abandon that system, so that later on we only paid those about whose loyalty there could be no question, all the other payments being deferred. All the deferred payments were subsequently collected by various Claims Boards in different towns, and at the end of the war we spent between £3,000,000 and £4,000,000 in satisfying those outstanding requisitions. The whole work was carried out by the Civil Government by what was called a Central Judicial Commission. I have in the last few years had an exceptional opportunity, perhaps, of seeing the work that was done by this Central Judicial Commission, and all I can say is that they carried out their work in a most business-like manner. They were fair and just to those to whom payments had to be made, and they protected the interest of the British taxpayer. As regards the training of our officers in peace time, I quite agree there is a great deal we want to do. We are not quite in such a favourable position as regards training them as some of our Continental neighbours. We have no power in this country to billet troops other than in licensed premises,

and we have no power to demand supplies for their use. On the Continent the troops, when they are billeted, are received cheerfully; the inhabitants even supply them with more than the law asks them to do. How different it is in this country! Imagine the outcry that would be raised even if it was proposed for a moment that we should billet troops in peace time or demand supplies for them! However, I hope the time will come—and before long too—when the civil population of this country will realise their shortcomings in this respect, and will welcome and provide for our troops as cheerfully and as freely as our Continental friends. As regards the organisation the lecturer has placed before us, I agree generally that it is on sound lines, and that the Requisition Service should be an entirely separate one from the Supply Service for the troops; the latter have quite enough to do to attend to the receipt and issue of supplies. The brief outline which Major Atkins has given us of his proposed organisation contains some very important suggestions, and I am sure when the details have been more fully worked out, they will go to a large extent towards solving the very difficult and complex question of utilising the local resources of the country to the fullest extent.

Colonel Sir J. S. Young, Knt., C.V.O. (Dep. Commissary-General, Retired):—I had the misfortune, owing to circumstances beyond my control, of not being present while the lecture was delivered, but I have attended here this afternoon because I take a very deep interest in the subject. I was honoured by being the first instructor in Supply duties at the School which now is under the superintendence of the lecturer; and I have also had experience in war of requisitions. It was my privilege and fortune to go through part of the Franco-German War, and I also went through the whole of the Russo-Turkish War. If I have rightly gathered the tendency of the lecture it is to obtain a more scientific method of dealing with the subject of Supply and Transport in war as immediately connected with requisitioning in war. If that is so, I think this lecture may prove a new departure in our organisation of preparation for war. As a Commissariat officer, I venture to say that up to the South African campaign of 1899-1902 there was absolutely no scientific preparation for the conduct of war in any particular theatre of war. I hold that if we are to be adequately prepared for the contingencies which are in the minds of anyone who studies the responsibilities of Empire, it is in connection with Supply and Transport in war that the mobility which has been referred to by the Commandant of the Staff College will find its true foundation. If, as Wellington said, an army moves upon its belly, surely it stands to reason that one department of preparation for war which it is necessary to organise with thoroughness in times of peace is that of the study of Supply and Transport in war. I think the Lecturer has pointed the way to one of the chief considerations in connection with this subject when in his synopsis he advocates, under the head of the training of officers, the study of foreign systems. If you will give only a superficial glance at foreign systems you will see that taking the German Army for instance, that Army studies and bases the whole of its organisation in war upon certain contingencies which are thought out in peace by the General Staff and by those who are responsible for the conduct of the operations in war. With regard to the Franco-German campaign, through which I was privileged to go as an operating influence in the cause of humanity, I was there given an insight into the German system, which taught me a lesson for all time. Wellington, when he advanced from

Spain into France, adopted, as you know, the system of payment for all supplies. The Germans in their advance into France adopted, to a certain extent, the system of requisitions upon the inhabitants. They captured the Mayor of a town or district, and did not release him until he had provided them with food and accommodation in houses for the troops whom they wished to be sustained in those towns and districts. But they followed that up intelligently with a system of payment for further supplies, which gave confidence to their system of requisitioning in war. I know there are several young officers here to-day who are as keen as anybody can be to use their intelligence to serve their country by adequately training themselves in times of peace for times of war, and I say to them that it is absolute folly to study theories if you do not follow it up with knowledge as to the resources of countries. What is the good of applying to South Africa the same theory as applied to a land flowing with milk and honey as was France to the Germans? There was more than enough in France to support the population as it existed and the invading force as well. In South Africa there might have been, as General Clayton has said, certain resources which the army requisitioned and paid for, but what were they in relation to the bulk of the supplies which were required for the maintenance of the mobility of the forces? Those who were in South Africa know perfectly well that if victory remained with our arms it was because of the fact that, in the later stages of the war at any rate, mobility was what was necessary and agreed to as necessary, and what was practised by young officers capable of using all the means of mobility. I congratulate this meeting on having in the Chair the Secretary of the War Office, who is an old Commissariat officer, and therefore must have some sympathy with the objects of the lecture on this occasion; and his presence in the Chair to-day also shows, I trust, the sympathy of the War Office authorities with the subject under discussion. If the School of Instruction over which the lecturer at present presides, is to be of real use, you must not only study foreign systems, but you must send officers of the Supply and Transport service as agents to learn practically and thoroughly the resources of all the countries in which it is possible the operations of war may have to be conducted by our Army; and not until then will you have learned thoroughly the lesson of preparing for war during times of peace so far as regards the Supply and Transport of the British Army. It is, perhaps, a large order, but I have yet to learn that this nation, which is bound up in its commercial interests throughout the Empire, can possibly ignore the fact that Supply is based entirely on resources and the rapidity with which you can transport those resources to the active Army in the front line. Let us study these things as much as possible, but let us also carry into practice the study on the spot of the resources of the various countries of the world, for the British flag flies over far distant places which are little known so far as regards their resources. I venture also to say that even in the near Continent of Europe the resources of requisitioning in war are little known so far as regards their availability for the purposes of Supply and Transport, as they ought to be by a nation which leads the world in the principles of freedom and liberty and advance in all that stands for civilisation. I speak strongly because I have seen nations go under for want of study of these things and for want of preparation in times of peace for war. I venture to say that the lesson to be learnt from this lecture to-day—and I say this as a word of encouragement to the officers who have been trained and who are training also—is

that if they wish to serve their country upon the highest and widest aspect, they must learn not merely to study the practice of foreign systems, but they must also learn the really qualitative value of the resources of the various theatres in which our Army may make war.

The CHAIRMAN (Colonel Sir E. W. D. Ward):—We are much indebted to Major Crofton Atkins for the very able manner in which he has treated this important subject. It is one which the experience of our South African campaign has taught us must be worked by experts. On its expert treatment depends much of the successful administration and, therefore, success of our Army. There is a certainty that no General, unless he was operating in a desert or under analogous circumstances, would depend on the supplies from his base. The rapidity also of movements in modern warfare necessitates requisitioning, and therefore it is one of the fundamental sources of supply. There are fundamental postulates which must be observed in order that a solution of this problem may be obtained. The first and leading necessity, as the lecturer has pointed out, is a knowledge of the products of the land in which we are operating. This is obtained by the study of economic geography and economic statistics. We have made a step in this direction when the Secretary of State for War (Mr. Haldane) instituted the courses of instruction for administrative officers at the London School of Economics. From this school we are gradually producing a strong body of officers trained scientifically in the economic principles which are so essential to the conduct of the business of a campaign. It is, I know, a favourite text for many orators and civilian writers on military matters to dwell on the necessity for business principles in Army affairs. We at the War Office entirely concur in this theory, and in every particular are working it out in practice, and are endeavouring to assist those to whom we entrust the administration of our business by giving them opportunities of learning the scientific methods which will render them able to successfully compete with the numerous difficulties which will meet them. I entirely concur with the lecturer when he impresses on us the importance of previous knowledge of all these economic facts. I myself think that it is not always appreciated how much scientific knowledge is required to make a good Army Service Corps officer, and I feel that it would be a godsend to many an officer of the corps if a Manual for Requisitioning, revised annually if necessary, were prepared, repeating the rules to be observed in requisitioning, and with appendices stating the economic geography and giving in a condensed form the existing statistics of every country. Secondly, the organisation of the service is all important, and those on whom the duties would fall should be carefully selected for the purpose. I do not propose that the usual encouragement of additional pay should be given them. The reward—and it is a reward which would be eagerly sought after by every officer of the Army Service Corps—would be the knowledge that his chances of earning distinction would be amplified by the supply reconnaissance work, with its all-vital results, which would be committed to his charge. There is no doubt in my mind but that these requisitioning officers should be surplus to the ordinary establishments for war service at present existing. They cannot carry out their requisitioning work and also attend to the daily, and I may say hourly, requirements of the troops whom they have to feed. The requisitioning parties must go far afield, and should be with the cavalry well in advance of the main bodies. The selection of the officers and men, as I have said, for this

important duty is of supreme importance. A requisitioning officer must not only be active but he must be full of common-sense, tact, and self-reliance. He must be somewhat of heroic mould, if I may say so. I mean that his decisions must be entirely guided by a feeling of self-abnegation, and he must be prepared to stake even his own reputation on the cast of the die, for his decision made "on his own" may not always be subsequently approved either from political, diplomatic, or financial considerations. I fear—and many of those who were in South Africa, especially during the early stages of the war, will agree with me—that the difficulty which constantly arose was the inability to find officers who would take responsibility. I fear that this will always be the blot on any well-prepared system of regulations carefully written in the quiet times of peace. We are prone to prepare so many safeguards and hold out so many threats of personal responsibility that the average man shudders and shies at the bogey, and that in consequence his country may suffer through its own regulations. My own view is that the only fear, which on service should be placed before a supply officer, is the dread of a want of food for his troops. I am proud to say that this was the only dread which I observed in the Army Service Corps officers in South Africa during the war. The payment for requisitioned supplies should be prompt, and if possible on the spot. My own experience has led me to think that the payments should only be withheld when the goods are the property of the Government of the country against which we are operating. It is very difficult to absolutely ascertain whether the owner of the supplies is actively hostile to us, and a mistake in a decision on this subject makes bad blood, which is an evil far more hurtful than the payment of a comparatively small sum for goods which are necessities. I urge very strongly the encouragement of the study of languages by Army Service Corps officers. I do not think we sufficiently estimate the difficulties which ignorance of these entails on those who have to do the military business with the inhabitants of a hostile country. There is one point which I omitted to mention, and that is the advantage of adding to the requisitioning parties, men who have lived in the countries invaded, and who can be thoroughly trusted. I may say as an example of what I mean that during our advance to Pretoria, and at a critical period of the operations, I obtained most valuable information regarding the supplies from an Englishman, a civilian, who was attached to my staff, and who, knowing the language, and therefore being able to disguise himself, sent me from the country behind the Boer forces such *data* regarding stores of supplies that Lord Roberts was able to move forward, and having driven out our opponents, to requisition the supplies. I may explain that the reason of our difficulty was that our gallant whilom foes had with true military instinct destroyed the railway in our rear, and that therefore requisitioning was our only resource. I mention this as a suggestion regarding the requisitioning parties of the future, and as a slight addition to the staff proposed by the lecturer. I will not detain you longer, except to emphasise my belief that we must give our Army Service Corps officers every opportunity of studying the details of this important part of their duties, not only at home, but also abroad, by travel, by attendance at foreign manœuvres, and, where possible, foreign campaigns. In conclusion, I will thank Major Crofton Atkins most heartily on your behalf for the most instructive and lucid manner in which he has dealt with the subject which he has this day brought under our notice.

A NEW TACTICAL SYSTEM.

By Rear-Admiral BÖRRESEN, K.C.V.O.,
Chief of the Staff, Norwegian Navy.

Wednesday, 16th February, 1910.

Vice-Admiral Sir PERCY SCOTT, K.C.V.O., C.B., LL.D., in the Chair.

THE difficulty of fighting in a long single line, when the number of vessels has become very great, has, I think, been frequently pointed out in this Institution. And in the battle of Trafalgar, the British fleet was divided into two "Grand divisions," with instructions to the commander to have "the entire direction of his line, to make the attack upon the enemy, and to follow up the blow until they are captured or destroyed." I am quoting from Lord Nelson's famous memorandum.

This subdivision into two Grand Divisions, acting semi-independently, but with the same object, towards the same goal, may, by Mr. Corbett's recent discoveries, be traced back to the days of Howe and Kempenfelt; it went through its first great trials about a hundred years ago, and it was born again with terrible results in the last Russo-Japanese War.

I have therefore no hesitation in saying that it has been sanctioned by time and experience; and it is my study of the glorious days of the immortal British heroes of the 18th century, and especially of the battle of Trafalgar, that has led me to propose the tactics of support systems.

The risk of the tactical division of one's forces is that one of the divisions may be attacked at a moment, or in a position, in which it cannot receive the support of its consort division; and this is especially a danger in times like ours of rapid movements on the battlefield, rapid changes and rapid conclusions.

A few minutes may decide the day.

My first thought, therefore, during these studies was this: Can such a division of forces be contemplated without risks in our day of 20-knots battleships?

And I came to the conclusion that it could be done when the two divisions were tied together in some way or other, so as to make the one division automatically, that is to say without signals or special orders, follow the movements of the other.

I have tried to solve this problem by the observation of a horizontal angle formed by two lines, one drawn from one of the two consort divisions to the other, and the other line drawn from either of these divisions to the enemy's van or rear, whichever is to be attacked.

The angle A B C = the angle C A B. (Fig. 1.)

If this angle is fixed at 60°, the commanders have in this an additional proof of the correctness of their position, that the distance to the enemy ought to be equal to the distance to the consort division.

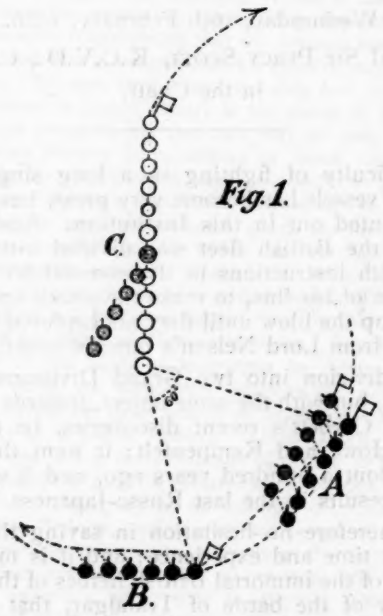


Fig. 1.

Each division ought to be formed on a line perpendicular, or approximately so, to the direction to the enemy, that is:—

Line ahead when abreast of the enemy, line abreast when ahead or astern of him, and line of bearing when on the bow or quarter.

I have tried to explain the system more thoroughly in the March number of 1903 of the JOURNAL of this Institution; but I am afraid that readers then received rather an unclear impression of it, an impression which I am anxious to-day to try to correct.

Of course the *raison d'être* of all kinds of tactics is a certain equality, or approach to equality, between the opponents. A squadron of battleships would not need to trouble about an elaborate system of tactics to fight a poor little gunboat; but the

day of competition for the command of the sea may come, and it will bring with it the necessity for the study of tactics.

It is between opponents of equal offensive strength, equal protection, and equal speed, that tactics will decide the day.

In my paper this afternoon, I therefore suppose an equal number of ships on both sides, with equal armament and equal speed; and I will let these opponents fight it out with two different systems of tactics, the long line ahead against the system of support, against a subdivided foe.

And when these battles have been fought to the bitter end, I will call the fleets forth again to new battles, in which also the tactics are similar, both sides dividing their forces.

It will then be seen what presence of mind and instant decision can do, and what superiority of speed can do.

But allow me, before opening the battle, to make a remark on the subject of distance. It is usually presumed, I think, that the artillery duel will begin when the fleets are at a distance of somewhere about 7,000 to 10,000 metres from one another. And at such distances, tactics proceed slowly, the mutual positions of the fleets do not change very rapidly unless they are on opposite tacks, and people are apt to think that, under such circumstances, between two equal foes—equal also in training, education and preparation of mind—the battle will be fought as an artillery duel only.

But I will suggest as a possibility that the weather in the North Sea may be such that the battle has to be fought at considerably shorter distances, where the changes in the relative positions of the fleets are more rapid, and the time for deliberation is short. And such circumstances will be a severer test of the commander-in-chief's preparedness of mind than the long-range battles, where he has more time to consider, and where a faulty manœuvre can be corrected before it has become fatal.

I should therefore consider it advisable to study tactics at the shortest distances at which a battle is likely to be fought; the tactics of the greater distances will follow of themselves.

Let us now take the case of two fleets, each of twelve battleships, opposing each other, the one—the C fleet—formed in single line ahead with a mean distance between the ships of 400 metres. The length of the line will, as a consequence, be about 4,500 metres. (*See* Fig. 1.)

This fleet is fighting another fleet of twelve ships, divided into two squadrons of six vessels each, one of the squadrons, B, formed in line abreast astern of the rear ship in the C fleet, and the other squadron or division, A, formed in line ahead or line of bearing, at an angle of 60° on the starboard quarter of the same rear ship. And I consider this rather an ideal position for A B to crush C's rear, and, when this is done, to do away with the rest.

But it cannot be denied that the containing squadron A will have a hard time of it, being in the focus of the hostile fire.

And, you will say, C will not allow this state of affairs to last long. It will make this manœuvre or that.

It may, for instance, order its rear division to form a line of bearing—as shown in Fig. 1 (according to Captain Semenoff, the Russian cruisers in Vityeft's rear took up such a position about one o'clock p.m., 10th August, when attacked in the rear, *see* Fig. 16)—and let its leading division veer in succession starboard over. But this will lead to a division of forces on the part of C, too, a case which will be treated later.

In the meantime, we have to see what C can do to shake off A and B without dividing its forces; and to that end we will let the two hostile fleets go through a series of quiet peace manœuvres the week before the final battle.

In order to get the whole thing into system, we will call that ship in the hostile fleet, or that part of it, rear or van, on which the divided fleet A B wants to concentrate its fire, "*the tactical centre,*" and round this centre draw a circle, the radius of which is the distance at which this fleet wishes to fight the battle—"*the tactical circle.*"

It is on the circumference of this tactical circle that the two consort divisions A and B ought to be disposed, and in such a way that the lines between the tactical centre and the two leading ships of A and B form an equilateral triangle, whose angle we will call "*the fleet-angle,*" the lines of A and B to be tangents to the tactical circle.

We will leave out here the question of approach—the tactics of approach—to revert to it later, and merely consider the deed done. Somehow or other A and B have gained these very favourable positions, and C has not found the way or means to manœuvre A and B out of them, but continues its course, as Rodjestvensky is said to have done for some time in the Straits of Tsushima.

That is, that the centre fleet C has orders to steer a steady course and give A and B time to study the keeping of their orders and their mutual positions, judge distances and fleet-angle.

I presume that A is the heavy squadron in the fleet, the *Dreadnoughts*, whereas B is rather the fast wing, consisting of battleship cruisers; and it is evident that the *Dreadnoughts* will have a hot time of it, as the fire from the foremost ships of the C-fleet will be concentrated on them. Their order of battle ought therefore to be oblique, and perpendicular to the line A C.

A will maintain the same speed as C, and keep the tactical centre (C's rear) in the same bearing, whereas B, the fast wing, will observe distances and fleet-angle, and make corrections, either by slowing down or increasing the speed, or by edging down on A or away from it.

When this position, and an analogous position with C's van as tactical centre, have been practised and studied, A complicates matters by changing its distance from C, which forces

B to different manœuvres in order to keep the fleet-angle at 60°.

Then C is allowed to complicate matters by veering together, for instance through 180°, which forces A and B to do the same, thereby changing the tactical centre from rear to van or *vice versâ*.

In the next period the fast wing may be allowed to make swift chordal movements (Fig. 2) to bring its whole broadside

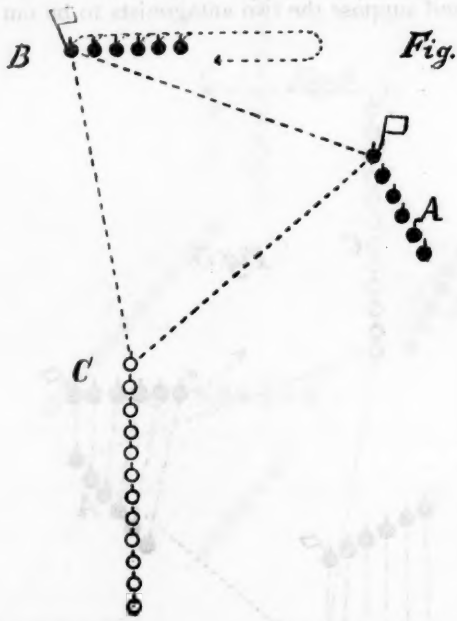


Fig. 2.

to bear, to threaten C's van with a torpedo-attack or the like, and then to resume again its former position with normal distance and normal fleet-angle.

Then there should follow a period of action for C. He is allowed to make the manœuvres he thinks fit, to shake off the two squadrons on the tactical circle, to try to isolate one of them, or mask the fire of the other, etc.

If the two squadrons have fastened on its rear (Fig. 3), it will naturally try to attack the containing squadron, A, by veering in succession towards it.

The rule for A will be to follow the movements of the centre fleet C, and slow down if C makes a movement which leaves A on the inner circle, and increase speed if C veers away from it. As a rule, A will keep the same course as C; but it may

be necessary for it, if C veers towards it, to take the opposite course and run down towards C's rear (Fig. 3).

C may also veer through 180° to attack the fast wing B (Fig. 4), thus forcing A and B to veer together, etc.

And then comes the last period, in which C also divides into two semi-independent divisions, finding no other way of shaking off A and B. But this will lead to more complicated cases, which had better be left until later in my lecture. We will first treat the subject of approach, and to that effect again declare war, and suppose the two antagonists to be out of sight

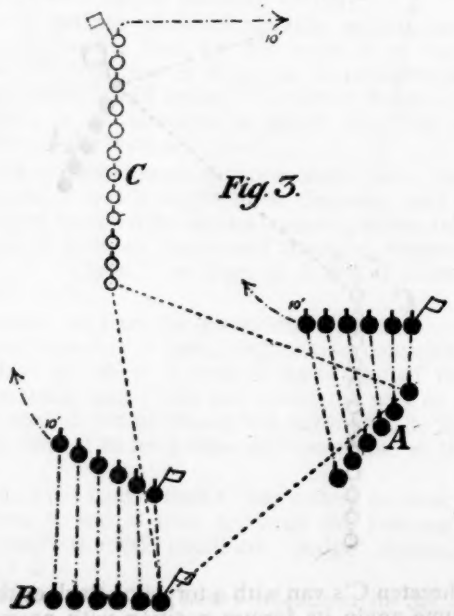


Fig. 3.

of each other, both speeding along in a comfortable line ahead, the admiral leading, the vice-admiral in the rear. Perhaps A B, which is prepared to subdivide, has two rear-admirals in the centre, one in the rear of the A-division, and another to lead the B-division.

We leave out the cruiser squadrons attached to each fleet, and will only consider the main body. The cruiser-squadron is at present out of sight; but an able commander will have it in his power, when he has completed his tactics of approach, to direct his cruiser-squadron by a wireless message against one or other of the hostile groups or wings, van or rear.

The Tactics of Approach.

The circumstances under which the two enemies obtain the first glimpse of each other may vary very much; they may

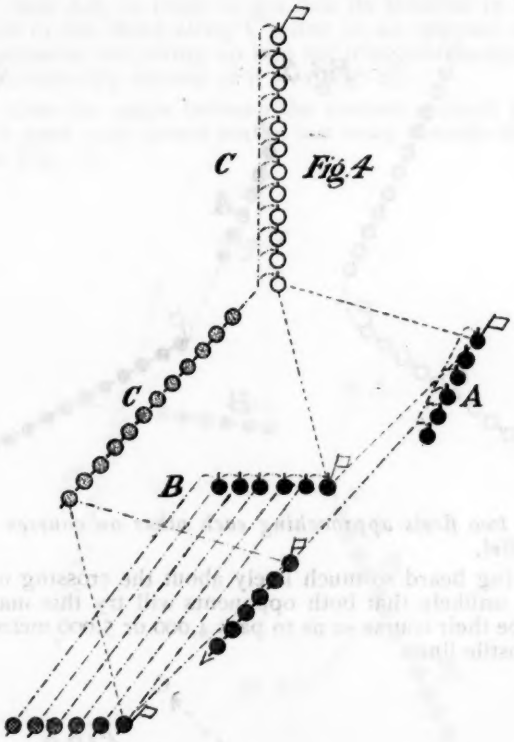


Fig. 4

discover each other coming out of the morning haze right abeam and on nearly parallel courses, either against each other or running the same way. You may discover your opponent ahead of you, either coming up against you or running slowly the same way; or he may be coming up astern of you. Or he may be discovered on your bow or quarter, and on a course that is not parallel to your own.

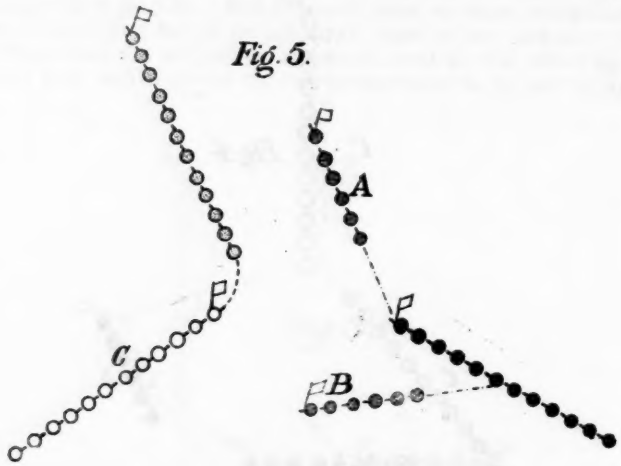
But in all these cases you will already have "heard" him on the wireless, and probably even received report from your cruisers about his formation, course, speed, number and name of vessels, etc.

So your plans may already be laid, clear and finished, by the time you come within sight of him. You only want to see

that the reports about the formation, course, number of vessels, etc., were correct, in order to hoist the signal that makes it clear to the subordinate commanders what your plan of action is.

Let us consider these cases in turn, and let us begin with a more general case, namely,

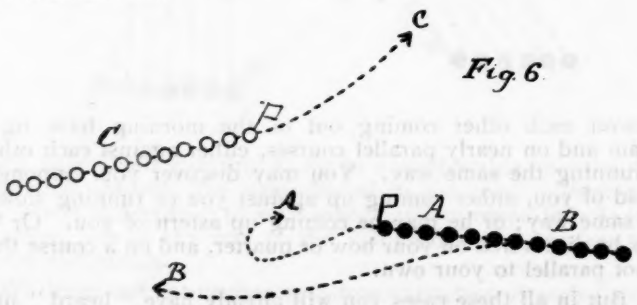
Fig. 5.



The two fleets approaching each other on courses that are not parallel.

Having heard so much lately about the crossing of the T, it is not unlikely that both opponents will try this manœuvre, and shape their course so as to pass 4,000 or 5,000 metres ahead of the hostile line.

Fig. 6



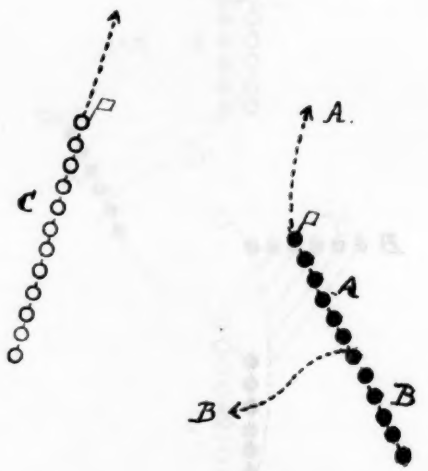
I take it for granted that neither of them will succeed in the first manœuvre, but AB, which has decided to divide its forces, may at last get its fast wing hung on to C's rear upon the same principle (*see* Fig. 5), while it is acting the containing *rôle* with its heavy division. As soon as it sees that the enemy

changes his course, it orders B to take up a position south-east of him, with the rear of the hostile fleet as the tactical centre, while A itself takes a course parallel to C.

The mutual position of the two fleets at the moment of sighting each other may be such (angle between courses very obtuse), that AB, in order to get into its position in C's rear, may have to run down along C's line on an opposite or nearly opposite course, and swing up into the triangular position when it has the rear ship abreast of it (*see* Fig. 6).

Or when the angle between the courses is small (an acute angle), it need only spread out its fast wing towards the hostile rear (*see* Fig. 7).

Fig. 7



In all these cases AB will have to remember that the danger-zones of torpedoes and mines are very much wider and more imminent astern of the enemy than ahead of him.

We will now take the special cases one by one.

1. *AB sights the enemy right ahead, or nearly so, and on the same course as himself.*

To attack C's rear, which is the natural or only thing to do, A orders his fast wing, the B-division, to use its highest speed and get up, in line ahead, abreast of his own line (Fig. 8), ready to spread out in line abreast across C's rear, while A leads his heavy division up abreast of C's line to contain the van.

To study the counter-manœuvres that C might try in order to shake off A and B, I refer to Figs. 1 to 4, or to war games, where the problems can be followed in every detail.

2. *AB sights the enemy right ahead, or nearly right ahead, coming up against him.*

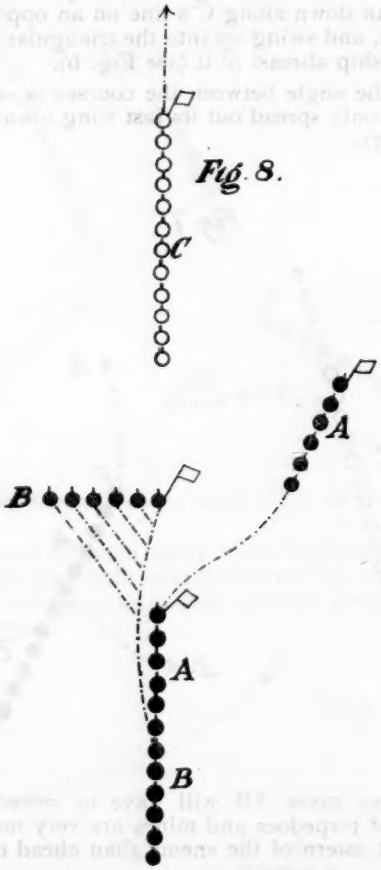


Fig. 8.

If A veers in succession to form his line across C's line, C may turn to the opposite course to attack AB's rear (A^1 B^1 C^1 Fig. 9).

It seems therefore better for AB to divide, and direct each division so as to envelope C's van, on the same course as C (A_2 B_2). He will then gain a position such as is treated under the next point.

3. *AB sights the enemy coming up astern on the same course as himself.*

He leads his divisions out to envelope C's van (Fig. 10). Under no circumstances will he let C get into the gap between the two divisions. This is prevented by a higher speed, or, if C is coming up too rapidly, by gradually letting the two divisions approach each other again.

4. *AB sights the enemy abeam on a parallel, or nearly parallel course, on the same or on opposite tacks.*

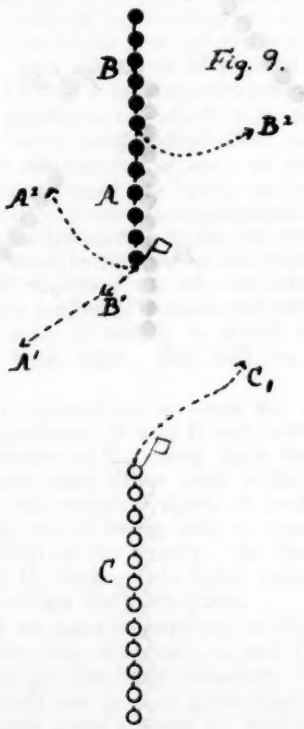


Fig. 9.

He may in both cases let his fast division break off towards the enemy's rear to form a line across it, while A himself, with his heavy division, approaches C for the purpose of gradually acting the containing *rôle*.

We now come to the case when the enemy also divides his forces, and we shall then discover, as perhaps many students of tactics have done before us, that dividing is accompanied by certain risks.

The great risk is that one of the two parts may be attacked by a superior number of the enemy's ships, or may be caught in an angle between two hostile divisions and isolated, while the other part, by some mishap or other, or by the tactics of the opponent, may be prevented from coming to its assistance.

But what is the danger for one part may be the great opportunity for the other, an opportunity which the weaker part may seek in its despair.

For tactics are the weapon of the weaker, which, if the battle is fought vessel against vessel, as in the days of the old

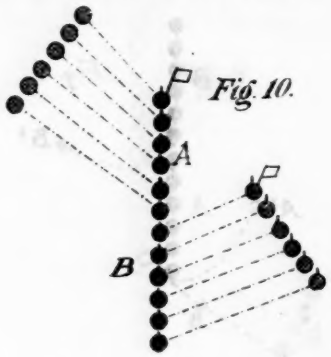
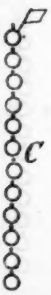


Fig. 10.



fighting instructions, has but little chance. It is for the weaker to put his wits in the scale against odds. And if tactics can give him, even with a risk, a chance to isolate part of the enemy's forces, and cripple or destroy it before the other can come to its assistance, they have shown their value, and ought to be studied by the weaker as well as by the stronger, by the latter because it is in his interest to have means in his power to prevent the former from getting that chance.

And if, as mentioned above, there are dangers and risks inherent in the principle of the division of forces, it ought to be a wise thing to make the units of the fleet, the individual vessels, as large and as powerful as possible, to prevent the necessity of dividing.

For it is the longest line that must divide. And with the same number of guns, the smallest units give the longest line.

There are reasons, however, that still may make a division of forces advantageous, *e.g.*, when the fleet consists of two or more squadrons of unequal speed.

Let the faster squadron have all the advantages of its higher speed, and this can only be by dividing the forces; they will be lost, to itself and to the whole fleet, by tying the faster squadron up to the slower. And the study of divided tactics will show the advantages of having a fast squadron attached to the fleet.

The absolute condition on which a tactical division of a fleet into two or more semi-independent squadrons can be allowed is that the commander of each of them always keeps one eye on his consort squadron, while he keeps the other eye on the enemy. Neither of the semi-independent squadrons must allow the other to be isolated, nor let the enemy get into the gap between them so as to be able to use both broadsides—one against each of the divisions cut off—an advantage, however, which perhaps is no longer of paramount importance with the new *Dreadnought* type of vessel, in which most of the guns can be trained on both sides. But still, in battle every gun counts.

If, therefore, C should try to force his way into the gap between the two squadrons, A and B will both have to form on nearly the same course as C, using their highest speed, and edging down towards each other until within double torpedo-distance. And in this running fight, A and B will have the advantage (*see* Fig. 10) of being able to concentrate their fire upon the leading ship of the enemy. At the same time, it is evident that A and B, during this fight, cannot use their bow guns, while C cannot use his stern guns.

Supposing—as we were to suppose in this chapter—that C had also divided into two divisions, C and C_2, and had been so unfortunate as to get his light squadron, C_2, ahead of AB, so that the latter could use its bow guns against C_2, and at the same time all its stern guns against C, that is to say that AB would be in a position to let a maximum number of their guns play against a minimum number of the enemy's guns, it is evident that AB would have gained a position of advantage.

If, on the contrary, C_2 had been placed in a position C_3 (Fig. 11) in rear of A or B, it is evident that it could have supported C very materially by raking A or B, without giving them the opportunity of using against it guns that could not otherwise have been used. C_3 would then have gained a position of good support.

From these extreme examples it will be apparent that during a battle in which both antagonists have divided their forces, there may be certain opportunities which a commander with initiative ought to seek.

And it will be for such a commander during the tactics of approach, to manœuvre so as to gain one or another of the positions mentioned, either the *offensive position*, the position of advantage, with one of the hostile divisions isolated between the lines formed by his own divisions, the other well outside

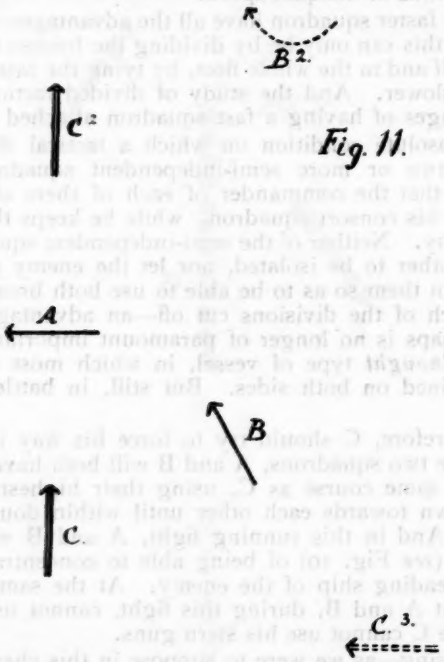


Fig. 11.

(*see* Fig. 11); or if he is thrown on the defensive and one of his divisions *is* enveloped by two hostile divisions, a position for his other division against one of the enemy's flanks, to give the first-named division support.

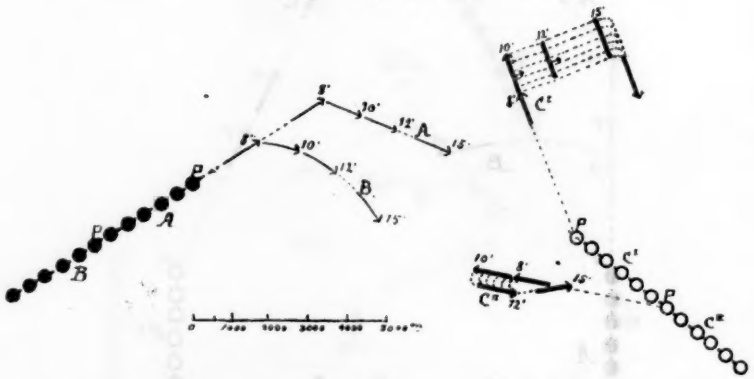
When everything else is equal, and victory and defeat are in the balance, an opportunity like one of these may decide the day, and it will be the aim of the daring tactics of approach to manœuvre the divisions into one of these positions, and of the battle tactics to keep the advantages thus gained.

If the commander of AB has a third division, B_2, at his disposal, it may be desirable for him to form a similar angle round C_2, as in Fig. 11 (black lines) was formed round C.

To attain this, it may be desirable to have this third, very fast division in reserve, *out of sight*, to direct it by wireless messages as circumstances may require, as soon as the enemy has taken up his order of battle according to the disposition of the forces he sees arrayed against him on the scene of action. This will also have the advantage of making the enemy feel uncertain, of perhaps bringing doubt into his mind, for to see a new hostile division loom up on the horizon unexpectedly, may not be without effect on an enemy's nerves.

During these manœuvres, it will be for divisions B and B_2 to prevent C or C_2 from attaining a position from which they also can use both their batteries.

Fig. 12.



If C steers for the gap between A and B, B must approach A, and fill up the gap.

If this position of AB, with one of the hostile divisions in the angle between their lines, and one outside, is a desirable one, the tactical problem will be, as mentioned above: How to manœuvre to obtain this position?

To study this problem thoroughly, each of the different cases mentioned under the tactics of approach ought to be treated *de novo*, under this new assumption that the antagonist also divides into semi-independent divisions.

Let us, as an example, take the case of the *two fleets sighting each other on courses that are not parallel.*

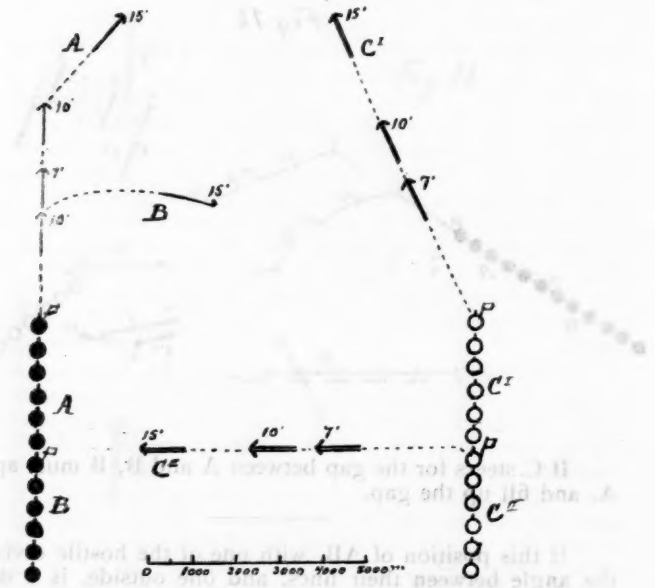
We will suppose that C immediately divides or is already divided into two divisions, C_1 and C_2. In the diagram (Fig. 12), the distance between the heads of the columns when C divides is 10,000 metres. AB divides, too, and with his division of heavy battleships steers for the gap between the two hostile divisions while his fast wing crosses the course of C_2.

C_1 and C_2 are forced to turn in order not to be separated.

If AB has at its disposal a higher speed than C, the latter may suddenly find its one division, C_2, isolated; the commanders of AB may succeed in getting C_2 into the angle between their lines, while C_1 is prevented from coming to its assistance.

In the figure, C_2 turns to port, away from C_1. It would have been more correct if he had turned starboard over, *towards his consort division* C_1, approaching the main body of his fleet, and at the same time crossing A's line (crossing his T).

Fig. 13.



Figs. 13 and 14 show two other examples.

C divides to attack AB's rear.

To meet this manœuvre, A divides his forces, and sends his fast wing B in between the two divisions C_1 and C_2, while he himself contains C_1 by following him as closely as possible.

Fig. 15 shows a stern chase. C divides to be better able to concentrate his fire upon the head of A's line.

A is forced to divide, and sends his fast wing B starboard over to enfilade the line of C_1.

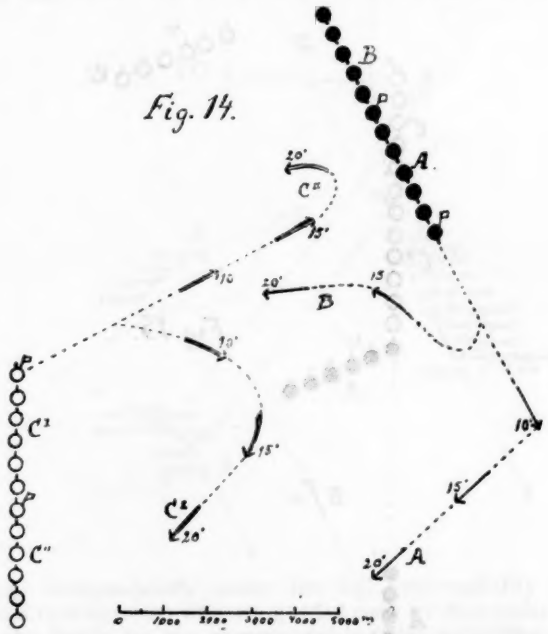
If B has a considerably higher speed than C_1, it may come up to attack the latter's flank, and put it in a rather disagreeable position between A and B, which will force C again to unite his two divisions.

It will, on the whole, be seen that if one's enemy finds it to be to his advantage to divide his forces, it will, as a rule, be advisable to manœuvre, so as to force him to let his semi-independent divisions unite again.

Or to adopt the more daring, the more risky plan, to manœuvre so as to isolate one or the other of his divisions between one's own lines.

There will, of course, always be many who will say: "This division of forces is a very risky thing to do. We have seen

Fig. 14.



now how easily C_1 and C_2 could have got into a *mêlée*, to close quarters, by this manœuvre. We would rather keep together and trust to our artillery-fire." But it is not always certain that the course that seems least risky to take is the one that leads to victory.

And in studying the diagrams that have been given, and following up the manœuvres begun in them, I fancy that one will come to the result that in order to shake off a divided foe that manœuvres well, it will be necessary for one's self to divide, given the same length of lines.

But to lessen the risk, it may be worth while to adopt the rule not to divide on opposite, or nearly opposite, courses of the enemy.

I have mentioned the idea of holding in reserve at a given distance out of sight, say twenty miles away, a very fast division, to be directed, according to circumstances, to attack one or other of the flanks of the enemy.

This plan ought to be tried in special war games, in which AB, who is given a very fast cruiser-squadron in a certain

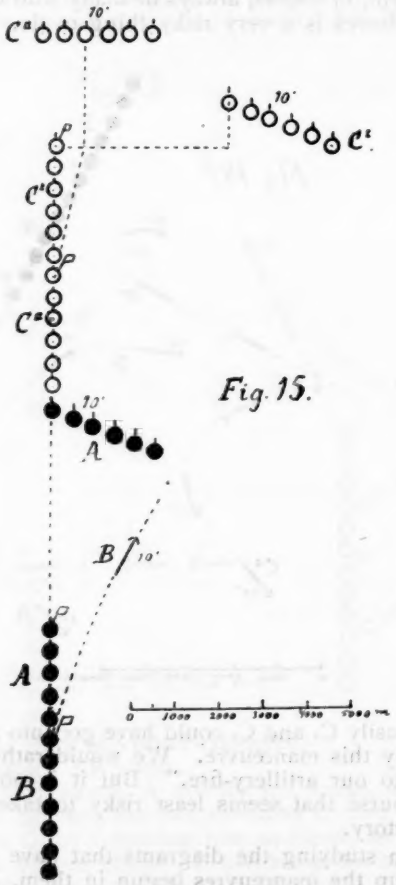


Fig. 15.

direction and at a certain distance from the main fleet, will try to manœuvre his fleet and direct the cruiser-squadron, so as to get the hostile fleet in between the angles of, and under the concentrated cross-fire from, all his divisions, and to keep it there. (*See* Fig. 11.)

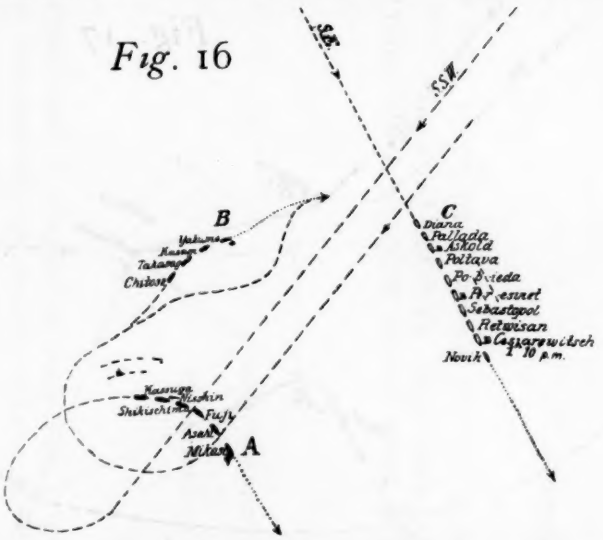
The study of these manœuvres and orders will be the work of the battle tactics, which in their turn ought to be tried during the great manœuvres.

Battle Tactics.

But battle tactics are, of course, nowhere better studied than in battles actually fought. You will therefore allow me to refer to the battles of the Russo-Japanese War:—

"In the battle of Tsushima, say two officers who were present in the war, we see two different tactical systems fighting against each other: On the Japanese side the different divisions

Fig. 16



operating independently under the full responsibility of the divisional commanders who are guided only by directions issued before the battle by the commander-in-chief according to his plan of battle. On the Russian side a system which made each division and each ship follow in the wake of the commander-in-chief, acting only after his order, all initiative suppressed in the subordinate commanders and the whole body paralysed when the commander-in-chief is wounded."

The battle of the 10th August, 1904, gives an illustration of the same two systems pitched against each other.

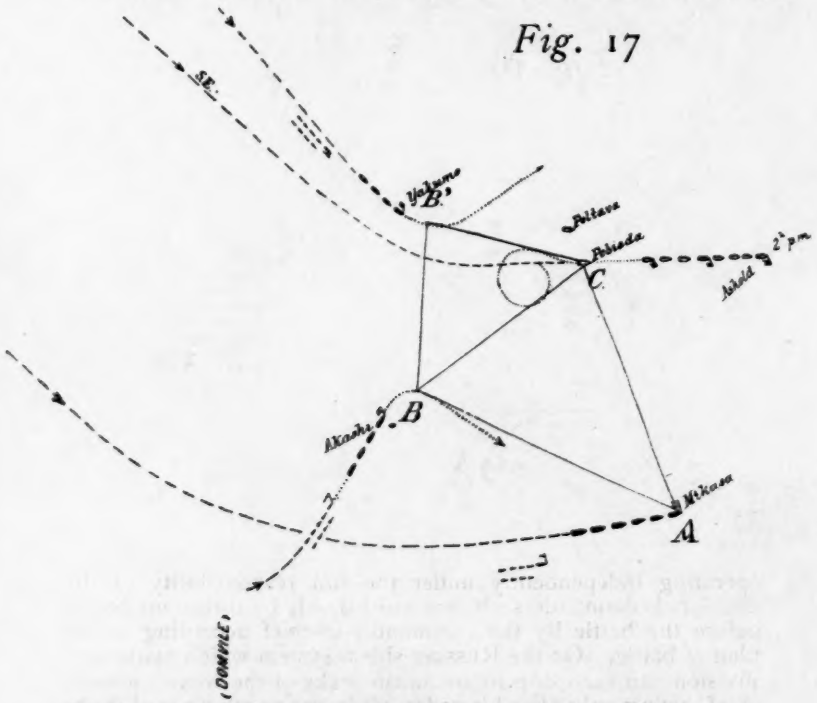
Fig. 16 shows the respective positions at the opening of the battle; Togo, in line ahead, has crossed the course of the Russians ahead of them, divides his squadron into two semi-independent divisions and attacks the rear of the enemy. He wants to prevent him from returning to Port Arthur. Togo's own division of battleships takes up a position in line ahead parallel to the enemy's line, while the armoured cruiser division

crosses the wake of the Russians, also in line ahead. Both divisions are by this manœuvre able to concentrate their broadsides on part of the Russian line and overwhelm it. (Read Captain Semenoff's description.)

It seems this time to be the rear of the Russians that has been selected as the tactical centre.

Having passed the Russian rear, the Second Division swings to starboard and attacks Admiral Vityeft's port quarter, while Togo, with his own and Dewa's divisions, attacks his starboard quarter, the three Japanese divisions now (about two

Fig. 17



o'clock p.m.) being approximately on parallel courses, and heading nearly the same way as the Russians. The respective positions are indicated by triangles A.B.C. and B.C.B.[1] (Fig. 17.)

The Tsushima will give other interesting examples of battle tactics.

Admiral Sir NATHANIEL BOWDEN-SMITH, K.C.B. :—Before offering a few remarks on Admiral Börresen's lecture, I should like to compliment the gallant officer on the well-considered proposals he has put before us. It appears to me that the way to discuss the paper would be round a table with models, and I shall therefore only offer a few general obser-

vations. I think the Admiral is quite right in warning us that naval actions will not always commence at long distances. He points out that in consequence of fogs or thick weather, hostile fleets may often be found near each other without being aware of each other's proximity, and I do not think they must always count on being warned by their scouts and wireless. During some recent manœuvres one of our Admirals, commanding a division of the Home Fleet, was told to consider himself part of an enemy's squadron, and was ordered to escort an imaginary force of 70,000 men to some port on the coast of Scotland without, of course, being observed by the British ships; and he stated publicly after the manœuvres were over that he was able to accomplish his object without meeting an enemy's ship in consequence of a friendly fog which prevailed nearly the whole time. None of the British scouts seem to have been able on that occasion to warn the British ships that a hostile force was near them. As regards formation, I must say that, speaking generally, I prefer the line ahead, both for cruising and attack; it is more flexible than other formations, though I agree with the gallant Admiral that a long line ahead is a mistake—the tail is too far distant from the leading ship. Speaking generally, I do not think there should ever be more than six or eight battleships in line ahead formation, but I do not see why they should be as much as 400 metres apart. Therefore, with a large fleet of battleships I should prefer to see them in line ahead of from six to eight ships, each under their own Admiral and able to assist each other as circumstances required. We must also remember that for cruising purposes in war time near the enemy's coast you would be less likely to be caught by mines if in line ahead than in any other formation. I shall leave any real criticism to younger officers, especially to our gallant Chairman, who is more up to date than I am.

Admiral Sir Cyprian A. G. Bridge, G.C.B.:—I agree so generally with the remarks made by the last speaker that I have few of my own to make. In no remark of his do I agree more thoroughly than that in which he expressed the hope that some of the younger officers will join in the discussion, because they in all probability will have opportunities of testing in peace manœuvres the tactical systems which have been proposed, and may not improbably have an opportunity of submitting them to the extreme test in actual hostilities. I do not think any member of the Institution would like Admiral Börresen to go away without feeling that all of us, from the senior to the junior members of the Institution, feel highly grateful to him for the compliment he has paid us in coming here to read this most important paper—probably one of the most important papers on naval subjects that has been read in this Theatre for a very long time. The mere composition of the paper and the reading of it are in themselves very remarkable performances, considering that it is written in a language which is not the gallant Admiral's mother tongue, and that it has been delivered before an audience composed entirely, or almost entirely, of people who speak the language in which the paper is written. There is, perhaps nothing very surprising in this when we consider that there is a strong kinship between the people of this country and the country to which the lecturer belongs. The Scandinavian element in the population of Great Britain and of Ireland is very much larger than is often supposed, and it is not very long ago since a very distinguished historian of the Swedish people claimed our own Nelson as a kinsman of his own, though his family had been for many hundred years living in England. I remember quite

well the paper which Admiral Börresen mentioned he published a few years ago. I was then on the other side of the world, but it made a great impression upon myself and many other officers. There is one thing the Admiral has done, in which I venture to think he has conferred a great obligation upon all students of tactics, *i.e.*, he has pointed out that there is such a thing as a position of tactical superiority in a fleet action. That comes down in almost direct descent as a doctrine from the time of Nelson. It was what Nelson thought, and what he put into practice. People may differ as to the special nature or character of the position, but that there is such a thing I think the Admiral has very clearly made out. The points with regard to fleet actions, the distances at which fleet actions are likely to be fought, and as to dividing fleets into parts have already been dealt with by Sir Nathaniel Bowden-Smith, whose remarks I would only repeat if I were to express my own opinion. But there is another reason why, I think, we ought to be specially grateful to the Admiral for his paper to-day, and that is for emphasising the distinction between what he has called the tactics of approach and the tactics of actual battle. Any student of tactical literature will be aware how very frequently this distinction is not perceived or understood. There are several other points which might be alluded to, but even the most indulgent audience could not possibly grant to any speaker who proposed to deal with them thoroughly the time that would be necessary for the purpose. This paper is not a paper to be talked of for ten-minute periods; it is a paper to be taken home and studied carefully and, as Admiral Bowden-Smith said, worked out if possible on a table with models. I am satisfied there is one remark of Admiral Börresen's which we should all do well to keep in mind, and that is, that after having these tactics worked out, they ought in turn to be tried during great manœuvres, which means, in other words, that the true tactical school is in the fleet at sea.

The CHAIRMAN (Vice-Admiral Sir Percy Scott):—It has been a very great pleasure to me to be in the Chair to-day, because when I visited Christiania a year ago with the fleet, and we received such great hospitality from the Norwegians, I had the pleasure of meeting Admiral Börresen. I did not expect that there would be a great amount of discussion upon the paper, because, as Admiral Sir Nathaniel Bowden-Smith and Sir Cyprian Bridge have said, it is a paper that you must take home with you, for you can only study and criticise it with models; but I am sure that when this paper goes out to the Navy in the JOURNAL of the Royal United Service Institution, a large number of naval officers will study it most carefully, and go through it in a manner that such a good paper deserves. Possibly there are some naval officers here to-day who have made a note of Admiral Börresen's proposition, and who will try it during our peace manœuvres. On behalf of the Royal United Service Institution and the officers and audience here present, I beg to thank you very much, Admiral Börresen, for your excellent lecture, for the wonderful way in which you have prepared it, and I congratulate you on having gone so thoroughly into all the details which made up such a good practical lecture.

Rear-Admiral BÖRRESEN, in reply, said:—Will you allow me, Sir, to thank the audience for the very kind reception I have received to-day? It has been a great satisfaction to me to be able to read this paper before English naval officers, whom we always look to as being at the head of all naval progress; and I shall certainly take home to my countrymen a picture of the very kind reception I have received to-day.

RASPLATA.

("THE RECKONING.")

By Commander VLADIMIR SEMENOFF, Imperial Russian Navy.

Translated, by permission of the Author, by L. A. B.

(Continued from June JOURNAL, p. 752).

CHAPTER V.

WE GO TO NOSSI-BE TO "FETCH OUT" ADMIRAL FÖLKERSAM'S DETACHMENT—OUR FIRST CHRISTMAS ON BOARD THE "SUVOROFF—THE FEELING IN ADMIRAL FÖLKERSAM'S DETACHMENT—THE REFUSAL OF THE "HAMBURG-AMERIKA" LINE—"ORDERS HAVE BEEN RECEIVED TO WAIT, ETC."—THE ORDERS OF THE "CHIEF" AND THE CHARACTERISTICS OF AN ARMADA—ILL OMEN—SOMETHING FROM MYSELF—ONCE MORE "SLABY-ARCO"—STEAM-BOATS ARMED WITH TORPEDOES—ATTEMPT AT MANŒVURES WITH A SKELETON ENEMY.

ON 1st and 2nd January a fresh breeze from the S.S.E. caused such a heavy sea that not only were we forced to interrupt our coaling, but communication by boat between the ships became very difficult. A curious-looking native craft brought off the local "Administrateur" (I hardly know how to translate this title) and the Collector of Customs, who came to call on the Admiral. Amongst other things they gave us a very good piece of advice, namely, to move the squadron a few miles further north, and to anchor in Tang-Tang roads, at the mouth of the river of that name, where a spit of land reaching far into the straits would protect us against the sea and the swell coming in from the south at this season of the year.

Late on 3rd January we again sent the *Russ* to Tamatave to collect intelligence, but chiefly to find out what Admiral Fölkersam was doing and intending to do. Next morning we moved the whole division, except the *Malay*, which was again suffering from machinery troubles, to the new anchorage, which under the prevailing conditions seemed indeed to be an excellent one, although the sailing directions make no mention of it.

The "master of the fleet"[1] rubbed his hands with delight. "We owe this entirely to those French settlers. It was an

[1] [Navigating officer on the Admiral's staff.]

excellent piece of advice." Of course, they did not give it without hopes of something in return. Well, the Admiral submitted their names for the Order of St. Stanislas "round the neck."[1] May they duly appreciate it!

The men-of-war successfully completed their coaling, in part from the German colliers, in part from our collier transports.

4th January passed in painful suspense. The *Russ* did not return, nor did we get any news whatever from Diego Suarez. In consequence of the prohibition to use the latter port, and thanks to the high-handed and autocratic action of the General Staff, the whole of our calculations had been upset, and the greatest confusion prevailed.

On the assumption that perhaps the colliers dared not leave Diego Suarez for fear of being captured by Japanese mercantile auxiliaries, as to the presence of which in these waters there were constant rumours, the Admiral decided to send Admiral Enquist with the cruisers *Nakimoff*, *Aurora*, and *Donskoi* for their protection to Diego Suarez, and from there to Nossi-Bé, to transmit to Admiral Fölkersam the order to rejoin the flag here at once.

On 5th January, at 5 a.m., the cruisers sailed in accordance with the above instructions. About noon on the same day the first collier arrived from Diego Suarez. She brought a letter from Commander W—— and a report from Admiral Fölkersam. The former wrote that up to date only one of our five armed merchant cruisers, the *Kuban*, had arrived at Diego Suarez; the whereabouts of the remainder was not known. There was also no news of the division consisting of the cruisers *Oleg* and *Isumrud*, and the destroyers *Grosny* and *Gromky*, which were to overtake us. Admiral Fölkersam reported that after having proceeded to Nossi-Bé in compliance with orders from the General Staff, he had commenced overhauling machinery, cleaning boilers, etc.—in naval language: "opened up everything." Nearly all his destroyers required a thorough refit. It would be impossible for him to make a move under a fortnight.

The Admiral developed a perfectly feverish activity at this time. When he ate or when he slept, I do not know. Nobody got a chance of discussing anything with him; he only issued orders or called for information on some point or other. Once when I nearly ran into him on the ladder, he growled out: "Oh well, after a long passage,—the well deserved rest, that is our tradition."

"They are old ships, your Excellency," I tried to put in; "the passage was indeed a long one."

"And the one before us is still longer! If they are so old that they can't steam, then they may go to the devil. We have no use for rubbish here. But no, it is simply the old

[1] [Commander.]

custom! However, I'll go there myself—I'll dig them out fast enough!"

The departure of our division for Nossi-Bé was fixed for the following day, 6th January. It meant going 600 miles out of our way, but what was to be done?—We had to "dig out" the others.

During the night the *Russ* arrived (from Tamatave); she brought the news of the fall of Port Arthur. It was bitter, humiliating for our pride, but since the destruction of the First Squadron this fact did not in reality make any change in our situation.

At 6 a.m. we received a message by wireless to the effect that the *Svetlana*, with the destroyers *Byedovy* and *Bodry*, was coming to meet us, detached by Admiral Fölkersam with a detailed report on the progress of the repairs, having apparently missed Admiral Enquist's division. All this was the result of the confusion occasioned by four independent departments issuing orders at the same time, viz., the Admiral (Rojestvensky), the Naval General Staff, those who directed the operations of the armed merchant cruisers, and the Ministry of Marine.

At 8 a.m. we weighed in accordance with the orders issued the evening before and proceeded towards Nossi-Bé. We did not meet the *Svetlana* and the destroyers until 11.30 a.m. We were astonished at their being so late, but it turned out that of the two only destroyers with Admiral Fölkersam, which had held out so far, the *Bodry* had had a breakdown on the way, in consequence of which she could only steam with one engine, that is, not more than 7 knots. The *Russ* was ordered to take her in tow; then we proceeded. Whilst this operation was being carried out (taking in tow), we communicated with the *Svetlana*. The Admiral received a detailed report of the voyage of the second division. (Later on I read it in the original.) As regarded the ships it contained nothing new, beyond a long list of every conceivable breakdown, and of repairs which could not be put off. On the other hand, it cited some interesting incidents, which indicated the attitude of the local authorities, an attitude which clearly reflected the views of the home authorities. It would seem that St. Petersburg had allowed itself to be too much intimidated; in Paris it had in no way been anticipated that we would relinquish so lightly the rights which were given us by the French declaration of neutrality, and though it had been suggested to us that we might go to Nossi-Bé, everyone had been quite prepared to see the squadron steaming into Diego Suarez. Buoys had, in fact, been already laid out there to indicate the anchor berths of the different ships; fresh provisions (including 1,000 bullocks) had been prepared, the local workshops of the "Messageries Maritimes" had increased their staff of workmen to enable extensive repairs to be dealt with expeditiously, etc. It looked as though the protest had been merely a matter of form, but from the moment that our diplo-

macy had shown how ready it was to give in, and that the General Staff had instantly ordered Admiral Fölkersam to go to Nossi-Bé—they were all the more pleased.

On 7th January [Russian Christmas Day] we remained stopped from 8.30 a.m. till noon, as the destroyers had to be coaled. About this time we called up the *Kuban* violently by wireless, she being in Diego Suarez, 30 miles off; but in vain.

After mass and the prescribed parade, the Admiral assembled all hands on the quarter-deck, and, glass in hand, made them a short, but very impressive speech. It is noted in my diary, almost verbatim :—

"God grant that, after serving your country well and faithfully, you may be vouchsafed a safe return and a happy meeting with the families you have left behind. On this high feast day we out here have to work and do our duty. Yes, we shall have to work often yet, and hard. This can't be helped—it is war. It is not for me to thank you for your services. You as well as I serve our country side by side. But it is my right and my duty to report to the Emperor how you are doing your duty, what fine fellows you are, and he himself will thank you in the name of Russia. Our task is heavy—our goal is far distant, and our enemy is strong. But always remember that '*the whole of Russia is looking upon you with confidence and in firm hope.*' May God help us to serve her honourably, to justify her confidence, not to deceive her hopes. To you, whom I trust! To Russia!"—and with a rapid movement he raised the glass to his lips, emptied it, and held it high over his bared head.

The Admiral had commenced in his usual quiet manner of speaking, but as he proceeded he became more and more excited, and there was an uncertain ring in his voice—not blind confidence, not set determination. The ship's company, which at first remained standing in their appointed places, fell completely under the spell of this oration. So as to be able to hear and see better, the men soon began to climb on each other's shoulders; like cats they climbed up by any handy rope on to the bridges, boats, turrets, hammock nettings—preserving dead silence all the time. The concluding words, which were pronounced in almost a broken voice, were drowned in cheers, which were even louder than the salute the guns were then firing. The front ranks could hardly keep back those in rear. It looked as if this avalanche of human beings were about to overwhelm the Admiral. Caps were thrown in the air, arms were raised as if in the act of taking an oath; many crossed themselves, there were tears in the eyes of many, but they were not ashamed of them. And—quite contrary to the rules of the service—loud voices were heard everywhere, calling out: "We'll do it!" "We won't give in!" "Lead us! Lead us!"

The ship's company did not calm down for a long time. Even when their special allowance of grog was being served out, they only came up hesitatingly. Their dinners were almost entirely forgotten.

I could not help thinking: "Oh, if we could go into action now!"

Alas, alas! there was still an entire ocean between us and the enemy.

About 5 p.m. the *Orel* had a breakdown in her machinery. We had to ease down to 6 knots. As this would make us very late, we sent the *Svetlana* on ahead to inform Admiral Fölkersam as to the probable time of our arrival.

Just before sunset we observed several columns of smoke on the horizon to the south-east. The *Borodino* reported that she could make out clearly four ships steaming in line ahead. We possessed no means whatever for scouting. We had not a single cruiser in company. They might very well be Japanese. Not far from Madagascar are the Seychelles, and still nearer Mauritius, a British colony, connected up with cables which were entirely in the hands of the British. No agents could send us any information which might not suit the allies of Japan.

There was no moon that night, but it was clear overhead. Every one was at action stations. Officers and men, except those actually on watch or on lookout, were sleeping at their guns fully dressed.

The remaining portion of the passage to Nossi-Bé passed uneventfully, but the difficult navigating conditions caused anxiety. The chart was simply covered with such ominous markings as "uncertain" near the soundings, and "P.D." (position doubtful) on the shoals and reefs.

"It doesn't matter; we are not coming here of our own free-will. Nicolai Ugodnic[1] will therefore pull us through," the Admiral said jokingly, but he never left the bridge. Turning to the captain, he added: "Have you got reliable signalmen aloft? Are they keeping a sharp lookout ahead?"[2]

About 11 a.m. on 9th January we arrived at Nossi-Bé, where Fölkersam's and Enquist's divisions were awaiting us, as well as the supply ships under the command of Captain Radloff (Imperial Navy).

On the same day the *Ural* arrived, and on 13th January, the *Terek*—both armed merchant cruisers.

The general spirit in Admiral Fölkersam's division differed markedly from that which permeated ours, influenced as it was by Admiral Rojestvensky's presence, by the example which his restless activity, his boundless energy, gave us. With them there was none of that; they were all convinced that after the destruction of the First Squadron and the fall of Port Arthur any further advance was impossible. With the overhauling of engines and cleaning of boilers they were preparing their ships

[1] [See former note.]

[2] Owing to the wonderful clearness and transparency of the waters of the ocean, it is often possible to discover shoal water by the change of colour of the surface. Of course, only by day.

for—the return journey. They spoke of this as openly as if the question had been definitely settled, and naturally this affected the whole life on board, and the manner of carrying out the work. Why should we worry ourselves, if it is all for nothing, and we are returning home?—It was the general demoralisation which is the characteristic consequence of a retreat without fighting. If it is to no purpose, then why work? And therefore they indulge in a little distraction, on shore they kill time, they bemuddle their brains to stifle that ugly thought which has already taken deep root: to turn back without having accomplished anything.

Admiral Fölkersam, who was already suffering from the illness which caused his death, either paid no attention to this dangerous mood, or was himself under its influence, weakened as he was by his complaint. The work on board went its usual course; the crews were given leave every day (and not only by watches); the officers spent the whole of their time off watch on shore; it is hardly necessary to mention the crews of the auxiliaries, both the chartered supply steamers and the ships of the Volunteer Fleet—these simply behaved like free people, for whom there exist no war regulations. In that wretched hole Nossi-Bé there was a busy life—but an unwholesome life, such as is only found at Port Said, that thoroughfare for the entire old world. Indigenous beauties, Frenchwomen (real or sham), who called themselves *artistes* or even "stars," streamed in from far and near; numerous hastily improvised *cafés chantants* opened their doors; countless public and secret gambling hells did a roaring trade.

The local "administrateur" was in sheer despair; he obviously did not know what to do. On one side—the disorder; on the other—the *nation amie et alliée* and the undoubted enrichment of the poor colony.

The advent of Admiral Rojestvensky drastically changed the course of affairs. The gambling hells were all closed. The crews of the mercantile auxiliaries were, as provided for in the war regulations, made amenable to all orders governing the Imperial Navy. Leave was given to the ships' companies only on high and feast days, and then only to men specially selected; the officers were only to consider themselves at liberty to go on shore when there was no work going on in their special branch or department, etc. And now work was begun at high pressure, not only in consequence of the threat of severe punishments, but also by reason of the influence of the idea, which brought every one to their senses, that Rojestvensky was not going to turn back and meant to accept battle in any case. Was there anything not in order? Was there anything defective? Why had it not been made good before? So some one is to blame? You had better take very good care. . . .

Even at Sainte Marie the Admiral had decided, though sorely against the grain, directly the news of the destruction of the First Squadron was received, to postpone the departure of

the squadron to 14th January, 1905; he did so in consequence of Admiral Fölkersam's report, stating that he needed a fortnight to carry out necessary repairs, and in consequence of all his calculations being upset by the dispositions made by the Foreign Office and General Staff, although he remained firmly convinced that the only chance of success lay in an immediate prosecution of the voyage.

The above mentioned date the Commander-in-Chief rigidly adhered to. "That will give him[1] his two weeks, if he can't do it in less. But then he must be ready," he once said in his short, abrupt manner. But when on arrival in Nossi-Bé he saw for himself the general slackness prevailing there, even Rojestvensky's personality had to bow to this *force majeure*.

With all his stubbornness, all the energy with which he stirred up the crews and incited all hands to renewed work, it was quite obvious that it would not be possible to sail on 14th January. The departure was therefore fixed for the 18th.

The following had already been drawn up and issued:—Orders as to the cruising formation; instructions as to coaling at sea from our own collier transports, and as to filling up these again from the German colliers, which were to meet us at certain sea rendezvous fixed by latitude and longitude; confidential instructions for the masters of these steamers had already been drafted, giving them their several rendezvous—everything had been thought of, the parts in the play had already been distributed, as it were, when suddenly—the Hamburg-Amerika Line declined to carry out the contract, which had already been signed. The first supercargo (a species of commander-in-chief of the collier fleet) declared that his company could not, in face of the new declaration of neutrality, undertake to deliver coal anywhere outside neutral waters (in which it was prohibited), and that therefore there could be no question of coaling at any rendezvous in the open sea.

This explanation was totally unexpected. Up to that moment we could not bestow sufficient praise on the punctuality with which the Hamburg-Amerika Line had fulfilled the contract it had undertaken.

Active telegraphic negotiations commenced with St. Petersburg.

Meanwhile, time was slipping by.

Every day lost could never be made good.—"We can't wait, we can't indeed," the Admiral broke out every now and then.

He still adhered to the plan he had decided upon at Sainte Marie: the coal carried by our own collier transports was amply sufficient for the passage to Vladivostok of the nine battleships (to which *Aurora* and *Svetlana* were added), therefore these vessels should proceed at once, without the loss of an hour; the whole of the rubbish must be left behind.

[1] Admiral Fölkersam.

It would seem that this view was not shared by St. Petersburg. Without having recourse to the information which S—— (the flag-lieutenant) found it possible to give me (this would really amount to a betrayal of official secrets), I can say that it was quite obvious from the Admiral's whole demeanour, from his remarks and his general dispositions, that we had received orders to await reinforcements, that St. Petersburg had closed its eyes to facts, and was trusting blindly to some miracle, to something we could not possibly carry out.

These were bad times. In my diary there is not a line between 18th and 30th January—the only (but very significant) interruption during the entire war. For this period I must rely upon my memory, strengthened, however, by the orders and circulars, by which the chief events of our daily life were regulated.

What can I say as to the general state of feeling in the squadron? When it was thoroughly realised that no junction was possible with any South-American cruisers or the Black Sea Fleet, there no longer existed in the squadron the three different views I have mentioned before, but only the two: either forward at once, or—back. No one thought of any reinforcements which might be sent to us from the Baltic. The representatives of these two views agreed on one point—that was the unanimous verdict: either forward or back—waiting was impossible.

The first words of my diary when I resumed it on 30th January were:—"A month yesterday since our arrival in Madagascar. The heat, the damp, the closeness are unbearable. Our stay in this climate, and not only the climate itself, but the mere fact of waiting here, this fatal delay, depresses every one. Complete demoralisation is not—I venture to say—far off. I write this very reluctantly. We must get on as quickly as possible, so as to put an end to it somehow."

Strange ideas come into one's head now and then in this heat. I thought: if we are not allowed to go on, won't the Japanese send some one to deal with us here? Officially we were outside territorial waters, where everything was possible. Why should they not attack us one night with torpedo-boats, and settle the remnants with sub-marines?

What an obsession! . . . one's mind a blank. . . .

Still, there was one man in the squadron who did not give in to this mood, who made up his mind that for him, since "they" did not, or would not, understand his reports, ordered him to await reinforcements which he called a "superfluous burden," and hoped for a miracle to be wrought by the dispensation of heaven—there was now nothing left but to do his duty as a soldier to the bitter end.

That man was Zenobius Rojestvensky.

To await reinforcements and then forward to victory and glory! Those are their orders?—Very well.—Although he had renounced all idea of victory, yet he would at least make use of

the time of waiting to train and weld together this heterogeneous armada, although the effort was belated.

He knew how to make people work, how to cheer up men who were on the verge of complete apathy. Alternating with coaling and refitting at anchor, we commenced a series of energetic exercises at sea—tactical as well as firing. Unhappily, the latter could not be indulged in as often as was desirable, since after every day of tactical exercises, which necessitated frequent changes of speed, two or three days had to be given up to making good machinery defects, directly due to the above, whilst as regarded target practice—there was the want of ammunition.

I could not help being reminded over and over again of the classical anecdote: "Why don't you fire?"—"For eighteen reasons: firstly, I have not got any powder——" "You need not say more, and can keep the other seventeen reasons to yourself."

How bitter and painful was it to read in a General Order,[1] evidently issued with a view to raising the drooping spirits of the men:—

"We must work hard, not sit still with our hands in our laps. We cannot afford much ammunition for target practice. . . . Every one must become familiar with the telescopic sights. . . . If God grant us a meeting with the enemy on the field of battle, we must husband our ammunition."

And that at a time when, according to our information, the Japanese gun-layers had been familiar with telescopic sights for years, and were carrying out target practice night and day, not only without economising in the very least their ammunition, which they possessed in plenty, but without any regard for the guns themselves,[2] for the replacement of which there were new ones all ready.

Simultaneously with this order another one appeared, which was evidently due to the reports of our agents. In it the Admiral ordered ships to redouble their vigilance, any floating object which might be sighted in the roads by day to be kept constantly under observation, to watch for any movement on the water at night, not to throw overboard any casks or cases, and not to permit any floating object to approach the ship's side, for the Japanese had, so he informed us, prepared various measures for causing every possible damage to our squadron before it could come in contact with their naval forces in the Far East.

"According to reliable information the Japanese have assembled a number of cruisers, both regular and auxiliary, in

[1] No. 29, of January 23rd, 1905.

[2] With the high gas pressures and temperatures which are produced by the firing, especially of large calibre guns, under present conditions, the bores get quickly worn—the inner tubes become erroded.

the southern straits and narrow waters on the other side of the Indian Ocean, with a view to way-laying us. They are accompanied by torpedo craft, which are to search out the bays in which our squadron might be expected to be found. Rumour also says that the first of the Japanese sub-marines, bought in England and America, are stationed there. Our active opponents do not confine themselves to preparing for the meeting with us on the other side of the Indian Ocean. Several scouts have been sent across to the waters surrounding this anchorage. The task of the latter consists in seizing any supply ships, which may have become separated from the squadron from any cause, or which may be met with in circumstances favourable to capture or destruction, and finally to attack our men-of-war also, if feasible. These cruisers and scouts are in telegraphic communication with agents stationed in Madagascar, even in Nossi-Bé,[1] through a colony belonging to an ally of Japan, not benevolently inclined towards us, and from these they receive accurate information of all our dispositions, the distribution and whereabouts, as well as movements, of all our ships."

This memorandum ended with a positively touching exhortation addressed to the several captains not to leave so serious and responsible a task as the safety of the squadron (such as is customary in times of peace) to young officers, who

"are not capable of finding their way or their whereabouts on a chart. It is no use setting any one a task beyond his capabilities. Any one inexperienced at patrol work, and hence dangerous to his own side, may yet find useful employment in another sphere, where less initiative and decision are required."

On 24th January the exercises of laying out countermines were commenced.

About this time (I do not remember the precise date) the armed merchant cruisers *Kuban, Terek,* and *Ural,* went out for target practice. "Well, and how did you get on?" I asked the staff gunnery officer, who had been superintending the practice, when he returned to the flagship.

He made a deprecatory gesture with his hand.

"Aimed at the rook and hit—the cow. But what more do you expect?[2] They were firing for the first time. They all behaved as if they had lost their way in a wood, or tumbled out of the moon."[2]

On 26th January the two battleship divisions (except the *Sissoi,* which once more had her machinery out of order) and

[1] Such a one, a Swede, who spoke Russian, was recognised and forced to quit Nossi-Bé, in consequence of the boycott which had been pronounced against him, as if by tacit agreement, both in the squadron and on shore by the better class French citizens; the latters' hair stood on end at the very mention of the word *espion.*

[2] [Russian colloquialisms.]

the cruisers which had been placed in the line, went out to carry out target practice after a plan which had been previously issued.

As I had already, to a certain extent, become acquainted with the state of preparation for war in the squadron, I did not expect to see anything very brilliant, but the reality surpassed my expectations.

"Well, and what do you say?" the flag-lieutenant (S——) asked me with a somewhat embarrassed smile, after the squadron had returned to Nossi-Bé after a long day's work.

"What do I say? Makaroff's task at Port Arthur was easier. What he had to deal with was at least the semblance of a squadron. But this . . . the Lord knows what they are!"

However, I will let the Admiral speak for himself.[1]

"The manner in which the battleships and cruisers weighed yesterday showed that after four months in the squadron the results which might have been expected have not been reached as yet. This operation took about one hour. But even at the end of a full hour the ships had not yet taken up their respective stations, notwithstanding the fact that the guide of the fleet was proceeding at a very slow speed. In the morning all ships were warned that at noon the signal would be made: 'Turn together 8 points, stop engines in line abreast, and drop targets.' Yet the captains lost their heads, and instead of forming single line abreast, the ships became a mere jumble, in which they were steaming about in every direction.

"In the first division the *Borodino* and *Orel* were specially conspicuous owing to the inattention of their captains. In the second division, consisting of three ships, only the *Navarin* turned to port, abreast of the *Suvoroff*; the *Ossliabia* and *Nakimoff* continued their course on their own account. The cruisers made no attempt to get into position. The *Donskoi* was 1 mile astern of the rest. When line ahead was reformed for target practice, the ships were so scattered that the distance from the *Suvoroff* to the *Donskoi* was 55 cables [11,000 yards].[2] It is a well-known fact that the fire of a single ship, even in the centre, when the line is so much extended, can be of no use to the whole. If we have not learnt to work together during the four months we have been in company, we are hardly likely to do so by the time we may, under God's will, expect to meet the enemy.[3] . . . The firing yesterday was extremely slow, and it showed to my greatest regret that, with the sole exception of the *Aurora*, none of the ships have devoted sufficient attention to the rules concerning the proper employment of the gun armament during the execution of the schemes of exercise.

"The expensive 12-inch shell were fired away without showing anything like the same proportion of hits as the guns

[1] General Order No. 42, of January 27th, 1905.

[2] It should not have been more than 26 cables [5,200 yards].

[3] I omit here some technical details, which would be neither interesting nor intelligible to the public, which is not familiar with naval matters.

of other calibres. . . . Practice with the 12-pounder Q.F. guns was very bad; apparently the telescopic sights worked 'admirably' during the preliminary aiming exercises, but had no effect in laying the gun accurately. . . . As regards the firing of the 6-pounder Q.F. guns, which are intended to repel torpedo attacks, one really feels ashamed to speak of it. We keep men at these guns every night for that express purpose, and by day the entire squadron did not score *one single hit* on the targets which represented the torpedo-boats, although these targets differed from the Japanese torpedo-boats to our advantage, inasmuch as that they were stationary. . . ."

Thus wrote the Admiral in his General Orders.

On 31st January and 1st February we again went out for target practice and tactical exercises. After that, in view of the minor breakdowns and damages on board the different ships, it was necessary to make a pause, and the next day's exercise did not take place until 7th February. This completed the gun-layers' practices, as we could not afford any more ammunition. We were hoping to see the supply ship *Irtysh* arrive soon, bringing us perhaps a number of practice projectiles and charges.

In truth, these were not really exercises, but—an examination. A man who, the day before his duel, fires a few shots at a target, is not learning anything, but only tests his skill as a marksman. Now, what were the results which we achieved?

I will spare the reader the bitter words I wrote in my diary at the time. Possibly I had expected too much. I will confine myself to short extracts from the General Orders, which appear to me to speak pretty plainly.

"On 31st January and 1st February the weighing of the several divisions was satisfactory; the single line ahead was kept well closed up, but the alterations, of course, even those made by turning together, were badly executed. The *Ossliabia* either did not keep in the line or extended her distance from the next ahead so far as to hamper the ships astern; by stopping one engine she forced the *Sissoi* and *Navarin* to raise their cones,[1] and it was a long time before these ships were able to resume their proper stations. Line abreast still seems to present the same difficulties. No line is formed, only a huddled-up mass. . . . Target practice on 31st January and 1st February was somewhat better than on 26th January, but with the heavy guns there is still the same reprehensible carelessness: on 26th January the *Suvoroff* fired a shot at a target which showed up clear of the *Donskoi's* stern and 6 cables beyond her, the latter then being on an opposite course

[1] Raising the cone means reducing speed. The higher the cone the less the speed. When the cone is close up, it indicates that the engines are stopped.

to the flagship. The officer controlling the fire on board the *Suvoroff* had given the gun concerned a certain range; the projectile pitched half a cable short of the *Donskoi* and a good deal to the left, in consequence of which it ricocheted over that ship. On this the sights should have been raised at least by 7 cables, so as to clear the *Donskoi*, and the deflection should have been altered largely, so as to place the shot more to the right. Notwithstanding the warning given by the first shot, the sights were only raised half a cable, and the deflection was not touched. The second shot, therefore, pitched right on the *Donskoi's* bridge. . . . This, of course, was bad enough, but the effect produced by it was totally unexpected: on 1st February, the *Suvoroff's* gun-layers were only induced with great difficulty to fire through the intervals between the ships, although the targets were 20 cables [4,000 yards] beyond the ships, which made it possible not only to fire through the intervals between the ships, but over these. It must be borne in mind that with a long single line it may sometimes be very important to alter the course 16 points in succession, so as to concentrate the fire on the rear of a hostile line steaming past on an opposite course, and that consequently it is absolutely necessary that the gun-layers should learn to fire through the intervals between their own ships, both when the two fleets are steaming in the same direction (which would generally be the case for cruisers) and on opposite courses. . . . The rate of fire was still more slow on 31st January and 1st February than on 26th January. If the 6-pounder Q.F. guns are really to be considered any longer as anti-torpedo guns, it must be impressed on their officers and men, that only a *hail* of shell of that calibre is capable of damaging a destroyer."[1]

"The manœuvres of the squadron on 7th February were badly executed. Not a single ship succeeded in altering course correctly, even 2 or 3 points, in single line ahead; some turned inside, others outside the leader's wake, although the sea was smooth and the force of the wind not more than 3.

"The turns together were especially badly executed. . . . The firing from the heavy guns on 7th February was a useless waste of ammunition. . . . The firing from the light Q.F. guns, which represented the repelling of a torpedo attack, was somewhat better than on a former occasion, but only in the first division. The firing of the second division of battleships, and of the cruisers, on this occasion was inexcusably bad."[2]

Is this enough of documents? They are expressed in the usual restrained official language. But what were the thoughts and feelings of those who, with this "huddled-up mass of ships," had been employed in "uselessly throwing away ammunition," and were to meet a squadron, flushed with

[1] General order No. 50 of February 2nd, 1905.
[2] General Order No. 71 of February 7th, 1905.

victory, stronger than themselves, well trained in times of peace, with a year's experience of war, and which, moreover, had had time to rest and refit?

Directly after our arrival at Nossi-Bé the Admiral ordered the supply steamer *Malay*, which had caused us so much delay by repeated breakdowns, to return to Russia. There was another such tub with Admiral Fölkersam's division, the *Knias Gortchakoff*. It was decided to dispense with her services as well.

Who was it who had chartered these steamers? Would it not have been possible to get, not merely something tolerable, but even quite good, anywhere in Europe, for the enormous sums spent on them?

But with us it is always the rule *not* to go to the bottom of anything.

It will be recollected that I once mentioned the fact that employees of the firm Slaby-Arco had been embarked in several ships of the squadron to ensure the proper working of their wireless installations on board. These were only bound, by the terms of the contract, to accompany us as far as Angra Pequeña, but already at the outset of the voyage many of these, fired by professional ambition, applied to the Admiral for permission to remain on longer, even at a reduced salary, declaring that it was at the seat of the war that their experience and knowledge would be of the greatest use. This permission had been granted to some. Now they had all thought better of it, and were hurrying home.

Similarly a number of stewards and mess waiters, who had been entered by private contract, now demanded their discharge, as they were not prepared to go any further, although they could very well have found out at Cronstadt what was before them. As a matter of fact, they then had expressed their ardent desire to take part in the fray.

On board our provision ship, the steamer *Espérance*, the refrigerating machinery began to give more and more trouble. The defects were always dealt with at once by the repair ship *Kamtchatka*, but the more frequently these breakdowns occurred, the more serious was their nature. A committee, under the presidency of the chief engineer of the fleet, did not find sufficient evidence to justify the assumption of wilful damage; all the same, there were suspicions, and rather grave ones. After every repair was effected, the machinery was started in the presence of this committee, and examined in all its parts. Everything appeared in order—when, suddenly, after a day or two, some inexplicable damage again made its appearance. The steamer had been taken over direct from a company trading between Argentina and London, at the very time when she was carrying a cargo of frozen meat. She was by no means an old vessel, but she had been bought, neither by the Board of Trade nor by the Ministry of Marine, but

simply by a merchant, who intended to exploit her for his personal interests. . . . Be this as it may, in consequence of the frequent stoppage of the refrigerating machinery, the temperature rose steadily in the store-rooms. The meat began to thaw and to rot. Finally, the struggle with this evil proved to be hopeless. Over 700 tons of spoilt meat had to be thrown overboard, and the *Espérance* returned to France. Thus the rats and cockroaches leave the vessel which is doomed to destruction.

Not only in the circle of my friends, in the messes to which I was invited as a former messmate, but also at the Admiral's table, I lost no opportunity of pointing out, and proving it by examples from our Port Arthur experience, how little the present type of destroyer was equal to the demands made upon these craft. It must be admitted that as an offensive flotilla they accomplished very little. Even the "surprise attack" on 8th February could hardly be characterised as really successful. Under exceptionally favourable conditions, which would lead one to expect the annihilation, if not of the entire squadron, at least of the greater part, only three ships were damaged.

When, however, these same destroyers, under the force of circumstances, were employed as guard and despatch boats, as scouts, mine-layers and sweepers, they rendered by no means inconsiderable services to both sides. In the execution of the various tasks, which up to the outbreak of war had never been demanded of them in times of peace, they often found themselves fighting their "opposite numbers" with guns or torpedoes (surface runners), and many of these spirited actions brought honour and glory to those who took part in them.

I think I am not far wrong in assuming that it is precisely in the above sense that destroyers attached to sea-going fleets should be trained. Of course, such training was looked upon as unpardonable heresy by the armchair strategists and the Transund tacticians, so I had to be cautious. Still, I scored some successes. By the latter part of January the destroyers which had accompanied Admiral Fölkersam, and had arrived at Nossi-Bé lame and maimed, had been put to rights; on 28th January an exercise was carried out on the following lines:—

A squadron, represented only by its leader (*Svetlana*), leaves Nossi-Bé for the East. It has obtained information that hostile torpedo craft are hiding somewhere amongst the islands in the neighbourhood with the intention of attacking it at the first favourable opportunity. A detachment, consisting of the *Zemtchug* and the first destroyer division, is therefore sent ahead to the suspected localities, to reconnoitre and act as a screen. The second destroyer division (the enemy), which had left earlier, was lying in hiding at some suitable place whence the approaches to the anchorage could be watched—the intentions and time of sailing of the squadron being only known to the enemy approximately (by means of spies). The

task of the squadron was to prevent a surprise attack, and to beat off by force an open one; of the enemy, to seize upon a favourable moment for attack.

I will not describe the manœuvres themselves, nor criticise their execution, but merely state that they aroused the interest, not only of those directly concerned, but of the entire squadron. The matter was discussed in all its bearings, there was a general awakening out of the state of apathy which had gradually spread more and more. . . . Unhappily, these were the last as well as the first manœuvres. Originally, it had been intended to carry out a whole series of similar exercises, but the idea had to be given up on account of the damages, the necessary repairs, and—chiefly—as this steaming at full speed was considered a "useless" strain on the machinery of the destroyers, already overtaxed as they had been. . . . My strength was not sufficient to swim against this stream.

As regarded mine-sweeping, I succeeded in getting my views accepted, notwithstanding the failure in the "Belt," which produced much in the way of jeering and benevolently ironical remarks. On 15th December, at Angra Pequeña, general instructions had been issued as regarded the formation of a mine-sweeping detachment by destroyers, together with a minute description and drawings of the apparatus employed outside Port Arthur. The "sweeps" were to be prepared at once by the big ships from their own materials, assisted by the *Kamtchatka,* so that immediately on Admiral Fölkersam's division joining us, the training of the destroyers in this hitherto unknown branch of their service might be started upon. Still, even after our arrival at Nossi-Bé this order remained a paper one. Its execution was hung up, since nothing was allowed to sail under my flag, and it could only be started under a strong foreign one.

Indeed, no sooner had Admiral Fölkersam shown an interest in the idea, and had, by order of the Commander-in-Chief, taken charge of the entire organisation, and begun to order about the staff torpedo officers (without the slightest compunction, since he was invested with full powers), than all difficulties vanished, everything was settled in the shortest of time: not only the mine-sweeping, but the laying out of mine defences by destroyers, which had up to then been looked upon as one of the Port Arthur fancies.

The business ran its regular course, so far as the almost constant breakdowns and damages of the destroyers' machinery permitted.

Probably, in view of their deplorable condition, and perhaps also influenced by my accounts of the importance which the Japanese attached to steam-boats armed with torpedoes, the Admiral ordered all the steam-boats carried by the ships to be formed into two divisions: the first one to consist of six boats of the newest types, the second of eight of the older and slower kind. Both divisions were placed at my disposal.

"Give them plenty of exercise. Let us hope that they will be good for something," the Admiral said to me. "They could also be used for exercising the ships in repelling torpedo attack. Our destroyers can't be used for this, as it is quite possible that they would be hopelessly damaged, and never reach their destination at all."

On 6th February, I took my flotilla out for the first time; they had never before been worked together. This, our first day's exercise, was marked by an incident which would have been ludicrous, if it had not been so sad.

Shortly before the war, in the autumn of 1903, a new signal code was introduced in our navy. (A standing signal committee had worked at this for five years.) The new signal books never reached Port Arthur, as it was already invested, but they got to Vladivostok, and the Second Squadron was also equipped with them.

At the time of our sailing from Libau I drew the attention of those concerned to the fact that if we were to meet the Port Arthur Squadron we should be speaking different languages; but I was pacified by the assurance that a set of old signal books would be taken as well in any case. The fall of Port Arthur, of course, removed the possibility of such a dilemma in the most radical manner.

But in the Second Squadron this is what occurred. During the hurried equipment of the ships they received boats' signal books of the new edition (these are abbreviated and simplified signal codes, having nothing in common with the ships' signal books); but the appendix, which contains the so-called evolutionary signals [governing tactical movements] had been omitted in the new edition. It was then discovered that in the *new* signal book, and in the appendix to the old one, the same combinations of flags had totally different meanings.

As soon as my flotilla was assembled off the *Suvoroff*, at the appointed time, I stepped into my "flag-boat," and, using the evolutionary signals (appendix of the old boats signal book) hoisted: "Single line ahead." Great was my astonishment when, on the signal being hauled down, all my boats, instead of taking up their proper stations in line, steamed off in every direction at full speed. They had looked out the signal in the new book and found that it meant: "Search the coast." I had some difficulty in collecting the company again.

On board the flagship there was at first much wonderment, but then as soon as the new book and the old appendix had been compared, they realised that it was a misunderstanding. Of course there was much merriment.

The result of this was that a general order was issued to the effect that the new, incomplete edition was to be locked up, and in future the old one with the appendix to be used.

A mere trifle!—perhaps, but characteristic all the same. And if such a thing had happened in the presence of the enemy!

During the following days there is again a gap in my diary, but this time not owing to a general depression of spirits, but simply owing to want of time, as I was manœuvring my flotilla from morning till night. It was a glorious, happy time. In the first instance, we had an occupation which shook us up and helped to dispel our sad thoughts. Secondly, my young "captains"—I must render them justice—were admirable; they did not know what fatigue meant, they did not know the word "impossible," and if, with God's help, we had got at the enemy, they would assuredly have given a good account of themselves. Thirdly, not only did no one look at me askance, did no one imagine that I was interfering in his concerns, but, on the contrary, everybody was prepared to give me his assistance, since everybody was free to act as he pleased, and since no one forced us to comply strictly with the letter of some regulations elaborated at headquarters.

On 14th February we went to sea with the whole squadron, then separated into two detachments, which manœuvred against each other, as in battle, but in accordance with a scheme which had been drawn up and issued beforehand. "No very marked results, but it was always something," as my diary has it, at the end of the description of the manœuvres. Towards evening, on our way back to Nossi-Bé, we were joined by the cruisers *Oleg*, *Isumrud*, *Dniepr* and *Rion* (the last two, ex-*Petersburg* and *Smolensk*, armed merchant cruisers) and the destroyers *Gromky* and *Grosny*, which we had been expecting from day to day.

Just a few words on the subject of wireless telegraphy in the squadron. The following is an extract from General Order No. 83 of 14th February:—

"On board the fleet auxiliaries *Korea* and *Kitai* there are installed Marconi W.T. apparatuses with short topmast and single leads. On board all the other ships of the squadron (except destroyers) there are Slaby-Arco installations with tall topmasts and a big net. The *Ural* carries a specially powerful Slaby-Arco apparatus, which should be able to work up to 500 miles and more. Throughout the voyage the *Korea's* apparatus alone was able to take in messages at 90 miles, whilst not one of our ships has been able to take in anything over 65 miles. And to-day, 14th February, at 6.30 a.m., the *Korea*, although she was lying behind a hill, was the first to receive the *Oleg's* message, which the *Ural's* powerful apparatus was unable to take in, although the latter had yesterday received orders to get into touch with the *Oleg*, and notwithstanding the fact that at the time there was not only no land, but not a single mast, between the *Oleg* and the *Ural*."

It only remained for us to thank the Technical Committee for having despised the well-proved Marconi system and

equipped us with the Slaby-Arco apparatus, which was supposed to work still better.

After incessant daily exercises for a week my little flotilla was sufficiently advanced to undertake more extended night manœuvres, amongst which, of course, frequent attacks on the squadron played the principal part. The latter, indeed, stood in much need of practising the repelling of torpedo attacks, as the Admiral had said. Nothing expressed this so clearly as his orders, where, based upon each of these exercises, the various rules and methods are called attention to, which are useful to remember when beating off a night attack by torpedo craft. Not as if these rules had been unknown to the crews—the crux of the matter lies in the conversion of the knowledge into practice. The most conscientious study in the seclusion of an office can never produce that masterhip of a craft which actual practical handling of its tools alone can give.

In time things got somewhat better; it became increasingly difficult to approach the squadron undetected, to divert its attention by a feint.

18th February was a day of great disappointment for me. Notwithstanding the assurance of the torpedo officers that everything in their department was in the best order, I insisted on the steamboats carrying out target practice with their torpedoes. Of course it was to take place by day, in a calm, and only at 5 cables (1,000 yards). In all this I will not speak of the second division (here the whole apparatus was obsolete—may God forgive those responsible!), but with the first division, six new boats, built and equipped in accordance with the latest ideas of the Technical Committee, the result was as follows:—

Seven torpedoes were fired. One never ran at all. Another began describing a circle, occasionally coming to the surface and threatening the boats, which speedily sought safety in flight. Two went off to the right, one to the left; finally two ran satisfactorily. And that in broad daylight, free from any disturbing factors, and with a smooth sea. We should have been in a fine plight if we had gone for the enemy with such weapons, in the conditions of a regular night attack.

"Quite inexplicable. Perhaps it was the swell; the test runs before delivery, in the harbour of Reval, went off splendidly," was the somewhat doubtful comment of the staff-torpedoist.

"That's just it—always in harbour. A little swell, maybe? But then, perhaps, when we do attack, the sea will be tossing about to any extent. Compared with this kind of self-deception, the old spar torpedo even was better. Then, if by the grace of God, one got close up and touched the hostile ship, the business was done. But here—are we to tow the thing up, or fire a revolver at the battleship? Oh! these magicians and necromancers! . . . Transund is ruining us."

He appeared to be offended.

However, the expression, "Transund is ruining us," does not emanate from me. It was used not long ago by the Admiral in the presence of many witnesses, when commenting on a report that "everything was in perfect order," and that, although the result had been *nil*, yet the "prescribed rules had all been carefully complied with."

For five days—or, to be quite accurate, for five times twenty-four hours—we were occupied, not with evolutions at sea, but with a very unusual business. Fearless of the thunderbolts of the Technical Committee, without the consent of which not one iota of the fittings may be touched, the engineer and torpedo officers, together with those commanding the steam-boats (for it was these, after all, who were to make the attack with these weapons), began to devise, to discuss, even to quarrel—to file, to lengthen, to bend this way and that . . . with the result that the torpedoes ran straight, and that was all one could demand.

On 21st February, we went out with the entire squadron, including the newly-joined ships, to manœuvre against a "skeleton enemy." (The *Irtysh* had still not arrived, so we could not do any firing.)

We began to manœuvre according to the prepared scheme, as last time, but when the Admiral later on in the action decided to make the attempt of permitting his two opponents, Admirals Fölkersam and Enquist, complete freedom of movements, subject to the "general idea" of the scheme, he was soon forced (and not without difficulty) to collect the shattered units of the squadron, and to spend the rest of the day in carrying out the simplest movements, in which, as on former occasions, the single line abreast and quarter-line [line of bearing], as well as "turns together," were the chief obstacles.

Almost on the eve of battle. . . . How bitter and terrible it all was!

"Well, my optimistic friend," Flag-Lieutenant S—— asked me, "you always manage to find a word of praise for everyone. . . . What do you say now?"

I merely shrugged my shoulders.

(To be continued.)

THE BRITISH ARMY IN A EUROPEAN CONFLICT.

(L'Armée Anglaise dans un Conflit Européen.)

General H. LANGLOIS.

Précis, by permission, by 2nd Lieutenant G. L. SPIERS, 8th Hussars.

AS one of the high military authorities invited by a Committee of the English Press to witness the manœuvres of our Territorial Army last August, General Langlois' recent publication has already aroused widespread interest in the principal military centres of Europe. In his very able and for the most part sympathetic study, the author has attempted for the benefit of his compatriots to throw some light on the all-important though uncertain problem now occupying the mind of every thinking Frenchman: Is Great Britain able to render effective support to France in the event of a possible conflict with a neighbouring State?

General Langlois entertains no doubt whatever that the union of France and England is highly beneficial to both countries. Nor does he doubt that it is the sincere desire of the highest circles in Germany to maintain peace. With this reservation, however, he fully admits the ever-growing danger of Pan-Germanism, which, should it be fanned into fury by any organised development of the national desire for colonial expansion, might force the hand of the Government and convulse Europe in a general war.

When two nations are drawn together the alliance as a rule is not so much due to sentiment as to a sense of common danger. "It has" says the General, "been the expression of the latter feeling in France and England which has led to the *Entente-Cordiale*."

Both nations have awakened to the similar dangers by which they are both menaced, while the ever-increasing jealousy provoked by their wealth has at last made them realise the necessity of looking to one another for moral as well as material support in case of necessity.

General Langlois, after referring to the mutual sympathy the two nations naturally feel for each other owing to the similarity of the democratic spirit of their respective institutions, asks the simple question: "What support then can each country give to the other?"

In a war with Germany the British navy would be but an insignificant factor in favour of France. This being so, is England in a position to land a sufficient number of trained troops upon the Continent to co-operate with France? Would England benefit by the support of France were she drawn into hostilities with Germany?

These are the two main problems the General endeavours to elucidate: "The British Army," he says, "is composed firstly of the Expeditionary Force, consisting of excellent troops well trained and ably commanded. A perfectly organised force capable in every way to take part in a European war. Secondly, the British Army is composed of the Territorial Force, upon whom would devolve the duty, in the absence of the Regular troops, of defending the British Islands against a possible invasion."

France thus finds herself deeply interested in ascertaining whether the Territorial Army may be safely regarded as being equal to the task assigned to it. Unless it is, and the Expeditionary Force is thus freed from all responsibilities of Home Defence, the utility of the Regular Army for any serious operations on the Continent would be gravely impaired, if not altogether annulled.

General Langlois emphatically pronounces in favour of the system inaugurated by Mr. Haldane as opposed to the old Volunteer and Militia organisations. He considers the introduction of the County Associations as particularly felicitous, and finds a word of praise for the Officers' Training Corps. He thinks it wise to recruit the leaders of our Territorial Forces from the classes where traditionally we may still expect to find a good social position no hindrance to a martial calling. In carrying out his intention of closely studying the Territorial organisation and composition, General Langlois took advantage of every occasion which offered itself to study the *personnel* and *matériel* of our second line of defence. In London he critically watched the roll call of several companies of Territorial infantry, and was much struck by the extreme youth of many of the men, some of whom he characterises as "almost children." With both officers and non-commissioned officers he was, however, more favourably impressed. The authority the former appeared to exercise he considers particularly noteworthy (a circumstance which he attributes to "social position"). The infantry equipment he pronounces excellent.

Of the Territorial field artillery his opinion is less gratifying. The men seemed to be even more youthful than the infantry. The hired horses, ill-shaped and badly matched, were unfit for their work, while their lack of military schooling caused them to fret in harness.

It was evident the men did not know how to ride, and in view of their inexperience he comments on the wisdom of the system of riding on the snaffle instead of the bit.

In making this criticism the General mentions in passing the lack of public interest which appears to be shown generally in this special branch of the Force.

On the 2nd August the General and his party were motored down to Salisbury Plain, which he compares to the French Camp at Châlons.

The organization of a Territorial Division at once elicits his full measure of praise. "The absence of red tape," attributed by him to the sound business qualities of the members of the County Organizations, gives the officers such an amount of freedom that he is constrained to openly express regret that a similar spirit of initiative and emulation is not introduced and fostered in the French Army. With the Territorial Army Medical Corps, which he saw at work, he was particularly pleased. He considers, with other specialised branches of the Force, this unit efficient in a high degree. In speaking of the medical officers themselves, who often leave highly remunerative private practices to attend the training, he explains that their presence in the Corps is only another instance of the latent patriotism of the nation which induces non-professional men to submit to an arduous training if they are once convinced that their country may be in danger.

The General, after his inspection of the artillery, made careful notes of the instruction given to the men. "The gunners," he says, "showed considerable aptitude, being in a great many instances mechanics by trade." But of those undergoing a course of riding instruction he says "although they gave proof of great willingness to learn, even to the extent of personal risk, their tuition was altogether insufficient and cannot possibly be rendered adequate in their two weeks' training." A field battery on the first day of instruction was initiated into battery drill: battery column at close intervals at a walk. In some cases the teams struggled and fought so much that the wagons often fell to the rear. The horses fretted considerably, and one horse, after causing its rider some trouble, lay down, a contingency which demonstrated the wisdom of the simplicity of the harness fastenings which makes it easy for a disabled horse to be quickly freed, thus lightening the task of the bombardiers and drivers when an accident occurs. But nothing, he adds, can make up for the crude inexperience of the men, and the non-commissioned officers of the Regular Forces had to do everything required to get the teams out of trouble. "It is impossible," adds the General, "in spite of the extreme goodwill displayed by all ranks, to give instruction to both men and horses at the same time, the latter not being trained to draw loads, whilst being still further impeded by inexperienced horsemen."

General Langlois expresses his belief that the artillery of the Territorial Army is not merely totally inefficient now, but

cannot for a long time to come be rendered fit to undertake the all-important mission assigned to it.

One evening, walking through the lines of an infantry brigade, he was pleased to see the men playing games, already forgetful of their hard day's work, and he thus obtained a more favourable impression of the physique of rank and file which on the previous day he had regarded as being too immature. The evident delight of all ranks to be out in the open, combined with the fact that everybody seemed to regard their period of training as a holiday, was noted by him as a healthy sign.

The morning following, the General witnessed a Field Day, in which the Territorial divisions with a cadet corps attached, were engaged against a brigade of Regulars.

He was altogether astonished at the scope of the scheme, which allowed of strategical manœuvres on a scale which he considers obviously useless for the instruction of such raw material as the Territorial Force. The primary idea, in his opinion, should be to teach units the elements of their employment in the field. Greater simplicity in the general scheme would, therefore, be far preferable. For instance, should it be thought desirable to study a frontal attack, it would be amply sufficient to have imaginary flanks. Again, for a flank attack a skeleton or "flag" main army would be amply sufficient for the purpose. The strategical role of officers, who in all probability will never have to deal with strategy, would thereby be relegated to its proper place for possible future instruction, and more time could thus be devoted to simple tactics and useful instruction.

In speaking of the plan of attack of the infantry, General Langlois observed that the two lines generally employed are too weak, nor are their flanks sufficiently supported by echelons to the rear. Behind the two lines, moreover, there is no sign of Reserve troops, the omission giving the whole an impression of weakness. It would be an easy matter to break through this weak line at any point.

In the attack, groups of individual units took good advantage of cover, but companies as a whole never closed up to follow depressions which would often have materially facilitated their advance. They also invariably failed to take advantage of points of great local importance. He cites an instance of this: "We saw a company flanked on either side pass in extended order over open ground, although to its right there was a depression which led to a clump of trees. Had the company followed this line it might easily have reached the trees without casualties, and have taken advantage of this important cover within close reach of the enemy. As it was, neither this company nor the company to its right varied in the least their geometrically rigid line of progression, and both the depression and the clump remained unoccupied."

The General noticed several similar incidents, both in the case of the Regulars and in that of the Territorials. From this he concludes that the English Army has not yet grasped the fact that it is possible to hold open spaces without troops, by fire from positions affording good cover. At no time did he see either units or groups racing for such positions. He was, however, prepared for this, as what he saw himself only corroborates former criticisms made by other French officers who had witnessed the manœuvres of the Regular Army.

The General then proceeds to consider the second line in the attack. The English plan—which is also that of Germany and Japan—he declares to be not only particularly vulnerable to artillery fire, but also open to the serious disadvantage of forming a natural target for the shower of rifle bullets which in all probability will pass over the heads of the first line. He is of opinion that the French system of small columns of sections or half-sections is infinitely preferable, as these small compact bodies can easily and rapidly move forward taking advantage of every fold in the ground.

With reference to certain unfortunate counter attacks, he says, "although they were ill-timed and badly directed, yet they showed to advantage the commendable offensive spirit innate in the British soldier."

Subsequently, however, the General makes what is perhaps his most adverse criticism. When once the action was commenced he never once saw a single reconnoitring patrol or, indeed, a patrol of any description. It was this fatal lack of information—and here in a great measure he blames the attacking cavalry—which caused them to miss an opportunity of rolling up the defender's flank. This was probably due to the absence of patrols. The only attempt at reconnaissance seemed to have been that on one solitary occasion some officers rode to the summit of a hill a few yards ahead of their own squadrons.

The smaller units certainly lack means of inter-communication, and are consequently ill-informed. The larger units, however, such as brigades, etc., have ample means of keeping in touch with each other and with headquarters. The General expresses the wish that the French Army should have similar facilities at their disposal.

He then touches on some of the general tactical considerations involved. The principle of the enveloping movement, to so many soldiers a principle of universal application, is stigmatised as being frequently attended with grave danger. In the foregoing manœuvres, for instance, General Langlois considers that had the defence retained its forces well in hand, it might easily have broken through the thin and unsupported lines of the attack by a determined onslaught.

Leaving the more serious aspect of the manœuvres, the General at last finds something for which he can give un-

qualified approval. When he is shown the site chosen for reviewing the troops his appreciation is as full of meaning as it is monosyllabic: "Admirable!" he exclaims.

On the 4th August the General was in Aldershot, where a division of Territorials was assembled. He at once noticed how much hardier and more robust-looking these men, recruited in the Eastern counties, were than the Londoners seen the previous day. He watched two battalions attacked by an equal force, fighting a rear guard action. His criticisms are similar to those he made on the previous day; he notes precision in the execution of movements, and adds that individual men take advantage of the ground, but larger units neglect the precautions by which their objective might be reached without exposure. They also fail to secure points of vantage in their advance. The attack is carried out in far too rigid lines which forge straight ahead, regardless of cover. Again, a wood was avoided both by troops retreating and by the pursuing force. Troops on the defensive neglected to cling stubbornly to clumps of trees which would not only have provided useful shelter but would have concealed effective counter attacks.

These incidents cause General Langlois to recall the time when French infantry avoided opportunities of pushing an attack through a wood or copse. While declaring that this time has passed, the General proceeds to speculate as to whether English infantry will benefit by the lesson learned by France 30 years ago. He believes it will, for he is satisfied that the British soldier, even the Territorial, has an aptitude for learning how to take advantage of ground.

The retreat, he continues, was well conducted, companies picking their way from point to point with great intelligence.

The General now makes some very interesting observations with regard to the English system of fire control from trenches. In his opinion, it is defective in spite of the coolness displayed by the men, who adjust their sights correctly and only fire when they have a definite target. He notices, however, a considerable lack of unison as well as control, and he considers it would be far better if the men took cover instead of remaining constantly with the upper part of their bodies exposed. The system adopted for fire control is to issue orders varying the rapidity of fire or specifying the number of rounds per minute to be expended. He suggests that a better plan would be to order rapid fire from a given number of men who would only expose themselves while firing, the remainder keeping under cover, and he asks, would such an arrangement impair the efficiency of fire? Rapid fire cannot be as accurate as slow. In the saving of life would this plan be certain to procure compensation for the loss of accuracy in the firing? He thinks it would, and that the practice of the future will influence the change in this direction.

For the system by which a Territorial Division forms an absolutely independent unit, the General had nothing but praise, equal commendation being given to the system which allows the Division to be trained in peace under the General Officer who would lead it in war. At Aldershot, as at Salisbury, the General found similar cause to admire the specialist corps. Here again the Territorial Army Medical Corps met with full approbation.

On the 5th August the General and his party moved North into Flintshire, where it had been arranged they should spend two days with the Lancashire Territorial Division. The Territorials had been retreating before a "flag" enemy which was supposed to have landed on the coast on the 1st August. On the 5th the retreat was being executed by a retirement of alternate brigades. As on the previous occasion, he at once made careful observations as to the general character and demeanour of the men. Recruited for the most part from the great industrial centres of Lancashire, and in very many instances officered by those holding authoritative positions over them in civil life, they showed marked cohesion, the authority of officers over men being very noticeable. The General observes that the *moral* of such men, serving voluntarily, in a national emergency, must of necessity be unusually high, a great point in favour of such a force as a whole, although it can never in itself lessen the urgent necessity of adequate practical training.

On the first day General Langlois remained attached to three batteries of field artillery, which he followed from point to point, as he watched them change position. He was thus given a good opportunity of forming an opinion as to their manœuvring capacity. A grassy slope rendered slippery by rain had to be negotiated. Even this simple operation, however, was almost too severe a test both for horses and drivers. Some of the teams refused, and the movement presented all sorts of difficulties, all caused by simple inexperience and lack of training. Narrow lanes had to be traversed on the way to a new position. Here again disaster must have overtaken the batteries but for the initiative of the gunners and the professional experience of a few of the non-commissioned officers.

The next position was occupied slowly, at a walk. It did not prevent confusion, the final result being that the guns were not ready to open fire before they were forced to move on again. From these observations we cannot wonder at the conclusions arrived at by the General, which are to the effect that, under the present conditions of training, the Territorial artillery can never attain a sufficient degree of efficiency to be relied upon in war.

In the same way in a rear guard action, although once in position guns opened fire fairly rapidly, it is too much to expect officers whose batteries fire only 100 shots a year to be

capable of taking proper advantage of the new time fuzed shells.

The various camps were in turn personally visited by the General, and he was glad to note many signs of initiative among Territorial officers. He again attributes this to the absence of red tape, due to the businesslike methods of the County Associations. These various considerations inducing him to declare that the English Territorial Army, however inefficient in other essentials, at any rate possesses the redeeming qualities of *moral* and initiative.

Next day the retreat was continued under similar conditions, but on this occasion the General took the opportunity to attach himself to the infantry, and he first followed a brigade under orders to launch a counter attack as soon as a neighbouring brigade had begun to retire. The position of assembly is pronounced by him as being too much exposed to view. He watched the brigade keenly as it formed into columns of march preparatory to the attack. Two weak detachments led the way, followed by the advanced guard and the main body, but the distances between these various bodies were so insignificant that they were powerless to fulfil their tactical object. The advanced guard deployed immediately in spite of the fact that the distance from the enemy was still considerable. They were, however, very soon compelled to close in to follow a hollow lane, where the columns had no longer the least protection beyond that furnished by the other brigade, which was itself heavily engaged in effecting its retreat.

This is a similar fault to that observed both at Aldershot and at Salisbury, and the General wonders whether the British Army itself has failed as a whole to grasp the primary principle of reconnaissance and protection.

He next proceeds to criticise the general position of the British Regular Army. He observes that our old system was sufficient when the English Navy was superior to the combined Navies of the two next strongest Powers, and when the non-existence of roads and other methods of communication had not rendered hitherto impassable natural barriers accessible to troops. In the past, England could afford to neglect European alliances which might have involved responsibility. At the present time, however, the situation has been profoundly modified. England can no longer be certain of maintaining an unchallenged position at sea. Splendid roads are changing inaccessible passes into convenient commercial routes, and the progress of railways is steadily binding the whole world together in a mesh of lines from which no country can shake itself free.

Lastly, England can no longer afford to be without allies on the Continent, a fact which means that she must be prepared to take her part in a European war. The British Army has, perforce, three tasks to fulfil, first of all, to protect her colonies, secondly, to protect the British Isles, thirdly, to be

prepared and in a position to take an active part in a possible war on the Continent of Europe.

To meet these requirements there ought certainly to be three different armed forces. First, an army responsible for the protection of the Colonies, to furnish them with garrisons, and to supply them with men and material. Secondly, a Territorial Army, a force which would not be called upon to leave the country. Thirdly, a National Army, prepared to take the field in Europe. England, however, has shirked the construction of this third army, which would of necessity involve a considerable increase in the Army Estimates. Thus it is to-day that the Regular Army of the United Kingdom, really the Colonial Army, is forced to undertake the double duty not only of protecting the Colonies, but of supporting the allies of England on the Continent in case of need. The greater part of this force, which can be fairly rapidly mobilised, is of course available for active service anywhere at short notice; but to render this scheme effective, the Colonies as well as the United Kingdom must be capable of defending themselves with local forces raised for the purpose. If such forces are not efficient as well as sufficient, the "Expeditionary Force" must take their place, and in that case the latter cannot be reckoned as being available for a certainty in case of a Continental war.

General Langlois implies that the only real solution is some method of universal service: every able-bodied man in the Empire submitting to military training for the sake of "Hearth and Home." But, he adds, as Englishmen have hardly yet begun to understand the obvious necessity of such service and their duty to their country, the present system is in the circumstances perhaps the best that could be devised with only the present voluntary raw material available.

The question for France to solve, therefore, is whether the Territorial Forces can be really relied upon to repel an invasion, so that the Expeditionary Force can be liberated to co-operate with France on the Continent?

The General has nothing but praise for the Regular Army. After approving in the strongest terms of the distribution of troops in the larger Camps, such as the Curragh, Salisbury Plain and Aldershot, he says "the Regular Army, half of which is permanently stationed in these camps, has the advantage of exceptional opportunities for the serious study of war by undergoing constant practical instruction over varied ground. With a sound doctrine to be inculcated by the newly-created General Staff, and by making good use of the remarkable instructional facilities it has at its disposal, the English Army should maintain for itself its old reputation of being one of the finest in the world." He lays particular stress on the efforts made at Headquarters to improve the class of recruit. He considers this to be a question of so much importance that he gives a

detailed account of the steps which have been taken in this direction since the termination of the South African War. Concluding his remarks on this subject, he gives the following testimony to the qualities of the British soldier. With his inborn spirit of holding his own, added to his high discipline, the British soldier can still be said to possess priceless assets which tell much to his advantage in estimating his value as a fighting unit.

In reviewing Mr. Haldane's reforms, the General gives them unqualified approval, showing as they do appreciation of the effect England's world policy must have upon the Army by the wise precautions he has taken to meet the requirements imposed upon it by new conditions. As Great Britain is now liable to take part in a continental struggle, rapidity of mobilisation has become essential, a result which can only be obtained by rendering efficient all the various branches of the Expeditionary Army. This has been already done, and the General considers that the sacrifice of certain units has been fully justified in view of the additional efficiency thereby gained by the remainder of the army.

This is more evident when it is remembered that these reductions in no way weaken the strength of the Expeditionary Force. The General considers our reserves based on the requirements of a six months' war an ample allowance, it being unlikely that, with the exception of a campaign in the Colonies, any modern war would last as long.

General Langlois approves of the system whereby officers belonging to the Special Reserve of Officers receive fair promotion according to seniority, and he depreciates the French system, which does not allow in the majority of cases of the promotion of officers belonging to the Reserve beyond the rank of lieutenant. He also very highly commends the plan by which a "Major-General in charge of Administration" has been allocated to each command with a special staff.

The General has studied the proposals which have been suggested for the creation of an "Imperial Army," and he is much impressed by the Imperial idea. He only regrets that the realisation of so vast a scheme must of necessity be slow.

The first aim of such a scheme must be to standardize the forces of the Colonies. He adds a few words on the subject of the Imperial General Staff, an obvious corollary to an Imperial Army, and concludes by saying that if this vast plan should be put into execution the British Empire would possess a valuable weapon of defence.

In resuming his review of the Expeditionary Force, he points out that the men under 20 years of age, who are forbidden by the regulations from forming part of it, would be a valuable addition to the home defence, and in estimating the strength of the Regular Army, he emphasises the well-known fact that many of our difficulties in South Africa were due to the poor

material which Great Britain was obliged to send out as reinforcements.

In summing up, the General concludes by saying "that Frenchmen are entitled to believe that the Expeditionary Force may be regarded as a serious factor in favour of an ally of Great Britain in case of a European conflict."

He then proceeds to make some highly interesting observations, dealing with the fighting efficiency of the Territorial Army. The infantry is under efficient leadership, and shows such good will and aptitude to learn that it ought to develop in the future into a serious factor which no Power desirous of invading England could seriously afford to ignore. The General did not see any Yeomanry Regiments, and has, therefore, been unable to form any opinion as to their efficiency. With reference to the Territorial artillery, however, his criticisms are severe, and his views are the following:—

It cannot be retained on its present footing, as its value is very small. Modern methods of fire are too complicated to be entrusted to officers not constantly in practice, and it is quite impossible to train efficient drivers in the short time the Territorials have at their command for practice and training.

The General makes three suggestions on this head:—

1. To create additional Regular artillery to be attached to the Territorial Army. This would be the best plan, but the most costly.
2. To place a Regular officer in charge of each Territorial battery, add a proportion of Regular non-commissioned officers, and allow two-thirds of the drivers, at the lowest estimate, to be Regulars. These two latter elements might perhaps be reduced by degrees, as re-engaged Territorials would gradually furnish better drivers.
3. A third solution would be to frankly adopt a material easy to handle and drawn by mechanical traction. The General is of opinion that a pom-pom firing a percussion shell of about 3 lbs. would fulfil all the requirements of the Territorial Army. The English roads seen by the General are well adapted to mechanical traction. This would certainly be the more economical solution of the problem.

Lastly, he considers that the proportion of artillery in the Territorial Army is excessive, as an invading force could not be furnished with a large proportion of this arm. He considers that it would be more in keeping with the idea of defence to have a more efficient but less numerous artillery, and he points out that the Regular artillery as at present allotted for foreign service would leave 27 batteries in England, which is a nucleus of considerable importance.

Referring again to the Imperial Army, the General remarks that even if this great plan is realised, Great Britain can only dispose of 16 divisions "in all" for any war not actually an invasion. England, therefore, can have no pretensions of conquest. Her army, however, would be of valuable assistance to a friendly Power, but could never be in a position to threaten a great Power with aggression. In dealing with the objections raised against the new system, among which he mentions the statement of a certain section of its opponents "that the military spirit of the nation will not last," he says he believes that it will continue as long as the danger lasts, that is, that it will live as long as Pan-Germanism is possessed of its present apparently unlimited ambition.

General Langlois devotes a chapter to his general conclusions, and endeavours to find an answer to the questions he asks in the beginning of his book. He maintains that the *Entente Cordiale* can only be useful to France, should a war with Germany arise, if England can give material assistance by sending over the greater part of her Expeditionary Force. He recognises that England is unable to bind herself to any such engagement until it is certain that the Territorial Force, with but little support from the Regular Army, is capable of repelling a possible German invasion.

The duty of Englishmen from the English point of view is to ascertain, in no uncertain manner, whether England, without the help of France, does or does not run the risk of being not only invaded, but overcome by an enemy powerful enough to dictate pitiless terms of peace.

The answer to these questions depends upon the ability, as far as can be ascertained, of the English troops to repel an invasion in either of the two contingencies which have now been brought into the realms of possibility.

General Langlois points out that Colonial troubles might arise of a sufficiently serious nature to draw both the Regular Army and the main Fleet to a distant part of the globe. In such an eventuality, hostile invasion of England might not mean the mere landing of 150,000 men in England, but a real invasion in force which might easily overwhelm any resistance which might be offered, and culminate in the dictation of conditions of peace in London. He considers the picture drawn by Lord Curzon of a conquered England as in no way exaggerated. The British Empire would cease to exist from the hour of defeat.

England would be in an equally dangerous position were France to be conquered on the Continent, for then Germany, mistress of the harbours on the North Sea she has long hoped and schemed to possess, would become a mighty sea power, against which it would be vain for England to hope to compete.

It is therefore evident that the alliance with France, and consequently also with Russia, is vital for England. With such an alliance she need have no fear of losing her Colonies.

Any local trouble that might arise there could be dealt with by local levies. Her naval strength could then be concentrated in the North Sea, where they would have the support of the French Navy.

It is open to serious doubt whether Germany, if she were certain that war with England would also involve war with France, would be likely to weaken her main Army, that on the French frontier, by sending 150,000 or 200,000 men to England. It would be a fatal strategical error which would probably invite defeat in the main theatre of war. But the Germans would not risk any mistake of the kind. Their essential doctrine of concentration is too sound. In any case the whole of the active German Army would be thrown on the French Eastern Frontier so that some 200,000 of the Landwehr, perhaps an exaggerated figure, would be the only troops available for a descent upon England, and they must be pessimists indeed who will refuse to admit that the 330,000 men remaining in England would be unable to repel such a force.

The General here, in a footnote, sounds again the warning which runs through the entire book: "The whole of the foregoing conclusions are based upon the assumption that the Territorial artillery will be made to be soundly efficient."

The objective of an invader must necessarily be London. The object of the defenders will be to defeat this scheme, for which purpose unity of direction and combined action will be indispensable. The General adds that he is forced to lay particular stress upon this point, as the principle of concentrated effort does not seem yet to have penetrated into the calculations of all the higher military circles in England.

England is eminently the country for the defensive. An assailant would have to display an even greater measure of initiative and intelligence than the German soldiery are known to be possessed of, and on the other hand their numerical inferiority would not allow them to indulge in the enveloping movements which find so much favour in the Fatherland.

Under these conditions the invader, in all probability, would be thrown back into the sea, or at least so long delayed that the fate of the campaign would have been decided on the Continent before they had attained their objective.

In case of a simultaneous Continental war, an invasion of England need produce no undue alarm, and the Territorial Army, plus one Regular Division, would afford ample protection for the British Islands.

This being admitted, England would be able to send five Divisions to the help of France, a weighty reinforcement on the eve of the Great Battle. The fate of the war will be decided on the Franco-German Frontier, and every effort must be concentrated there; any attempted diversion would prove fatal to either side.

The opportune arrival of the English Army on the French left wing would seriously compromise the German right wing, and should the latter violate Belgian Territory by passing south of Namur and Liege, it is probable that the English intervention would induce the participation of the Belgian Army, which would otherwise remain immobilised in the fortified camp at Antwerp, or at all events behind the Meuse.

The great and all-important factor is that the British Force should land in time, that is, in time to participate in the great battle which, in the opinion of the greatest military writers, will be decisive. This battle may begin at once on the termination of the German mobilisation, probably about the fifteenth day after the declaration of war, possibly even sooner. The English Expeditionary Force, if it is intended to take a serious part in the struggle, must be landed, therefore, at the very latest on the fifteenth day of the war. The mobilisation must be extremely rapid, and embarkation must follow immediately on mobilisation.

We now come to the vital question. Will the British people be content to allow their Regular Army to leave the country, and to rely on the inadequately trained Territorial Army for protection? If not, the value of an alliance with Great Britain is valueless to France. This is the whole question in a nutshell from the French point of view.

General Langlois, in bringing his study to a conclusion, makes the following final remarks:—

1. The *Entente* between England and France is advantageous to the latter, provided that the English Expeditionary Force can be landed on the Continent on the fifteenth day at latest. Unless England is prepared to do this she will be too late unless the battle should be prolonged beyond the calculations of French strategists.

2. The *Entente* is even more advantageous to England than to France, for it protects England from any serious danger on the part of Germany.

The two countries now thoroughly understand that their mutual interest is to move together hand in hand so as to oppose an impregnable barrier to Pan-Germanism.

In the February number of the *Revue des Deux Mondes*, published on the 15th, General Langlois contributes a further comment on the European situation, entitled *L'Armée Anglaise*. This article is in substance a summary of his book, *L'Armée Anglaise dans un conflit Européen*, with a few additions.

In dealing with the political situation of England, the author also touches upon the question of the British and French Navies.

He gives a clear and unmistakable demonstration in tabulated form of the ugly fact that the lead of England in battleships is gradually diminishing in favour of Germany. The remedy proposed by General Langlois is that of friendly understanding with other Powers combined with European alliances.

The General is firmly convinced that this is the safest guarantee that Great Britain can possess against the possibility of a German invasion.

The article in the *Revue des Deux Mondes,* unlike the book, which perforce was written with the remembrance of the courtesy due to the country which had extended to him an unstinted hospitality, is somewhat more severe both in criticism and in its general conclusions. An instance of this may be quoted when the General speaks of the absolute necessity of concentration. It came to his knowledge that a certain General had strongly recommended that each Territorial Division should manœuvre exclusively in its own country, so as to be the better able to defend their own homes more effectively.

In connection with this suggestion, General Langlois tritely observes that if every Territorial Division awaited the invader on its own Territorial ground, the enemy would of course reach London without difficulty.

This article, although perhaps of less interest to soldiers than the book itself, is well worth careful perusal. The thoughts and conclusions are those of a soldier of very much more than ordinary acumen, an officer of wide experience, and a keen observer. General Langlois is a patriot of whom the French nation and the French Army may well be proud, and a military authority whose words and writings are always worthy of attention and careful consideration.

HAND GRENADES IN THE RUSSO-JAPANESE WAR.

By A. BORTNOVSKI.

Translated from the *Voenni Sbornik*, January, 1910.

A LONG forgotten weapon, which for years had rusted uselessly in our arsenals, was re-introduced in the recent war. This was the hand grenade. As a result of the peculiar character of the operations grenades were much used, and in certain circumstances, especially at Port Arthur, their employment produced a decisive effect. Scarcely any other weapon was thought of when the enemy was met in deep ditches, or had to be driven out of strongly casemated buildings; and, generally speaking, they were of the greatest value in all hand-to-hand fighting.

It might be urged that the re-appearance of grenades was only ephemeral, that it was due to the exceptional conditions of the war, and will not be repeated. But this view will not bear examination. Careful study of the war shows that with the development of quick-firing weapons, troops in action involuntarily strive to increase the intensity of their fire and to protect themselves.

The men of the Japanese infantry, which is one of the best in the world, carried bags which they sometimes filled with earth in order to protect themselves from fire, and their firing lines often entrenched themselves.

In future we shall seldom see great battles which last only a few hours, like Leuthen and Rossbach, or a single day, like Mars la Tour, Gravelotte, etc. Field fortification is coming to its own. A force which holds a defensive position, strengthens it with all the contrivances of military engineering art. The attacker, in order to crush his enemy, must resort to close combat, and here the hand grenade comes in. It is indispensable both in fortress and in field warfare, and probably all Powers will re-introduce it.

The use of the grenade dates from the 15th century. In the 17th it was a favourite weapon, but since the 18th its popularity has declined. Both French and Russians used it at Sevastopol, as did the British in the Soudan, 1884-85. In the last war it was first used at Port Arthur, in August, 1904,

and from that time it became the principal weapon at close quarters. The Russian grenades were at first improvised from old iron cases or mountain artillery shells. Later, the brass cases of quick-firing artillery, cut down to a height of four inches, were pressed into the service. They were filled with dynamite or gun-cotton, and were fitted with ordinary Bickford fuze burning 15 seconds. The first Japanese grenades were made from old preserve tins, or bamboo tubes, filled with a pound of gun-cotton, and with a similar fuze. When first introduced, the fuzes were often cut too long, and the grenades were thrown back by the enemy. They were lighted with ordinary matches, but later on a rough percussion arrangement was improvised by means of a rifle cartridge, which acted as a primer, and steel wire.

Having once realised the value of grenades, both belligerents naturally sought to extend their sphere of action. Wooden mortars were introduced which threw bombs up to a range of 233 yards. These mortar tubes, which were of about five inches calibre, were fitted to a wooden stand and were given a constant elevation of 45°. Ranges of from 58 yards to the limit already mentioned were obtained by varying the propelling charge.

The Japanese invented a very powerful grenade by packing a prism of picric acid between two cakes of gun-cotton. The whole was wrapped in paper tied with string, and weighed about one pound. Bickford fuze with a fulminate primer was attached, and was lighted by means of tinder. This bomb was carried in a bag slung round the neck.

The Russians used various high explosives in their grenades, such as "Sampson" blasting powder, "Raskaruk," and "Divine's Explosive." The charge was covered with a coating of pitch, and was fired by means of Bickford fuze with fulminate primer. The bodies of old Japanese shrapnel were also used as cases. Each body was packed with two cakes of gun-cotton, held in place by a piece of wood, and was fired by means of the usual fuze and primer. A soft-headed match was embedded in the end of the fuze, its head being covered with wadding for safety; miss-fires never occurred.

The Russian workshops in Port Arthur could turn out 2,500 grenades in 24 hours. In the month of August alone 18,000 grenades were prepared.

The men had great faith in them, and would often drop their rifles so as to have their hands free for throwing.

Grenades were also extensively employed in the field armies. At Mukden the Japanese used a metal cylinder fitted with a wooden handle and with percussion action. Vertical impact was secured by means of a leaden ring round one end of the cylinder. After Mukden a pattern was adopted which had thick walls and no leaden ring; vertical impact was obtained by means of a tape tail fastened to the handle. The Russian patterns were generally similar in construction to the

Japanese, and had much the same percussion arrangement. The weight of both Russian and Japanese grenades was from one to two pounds.

On both sides the percussion grenades proved to be by far the best, especially those which were fitted with a safety arrangement. The grenades fired by means of Bickford fuze were unsatisfactory, the matches or tinder used to light the fuze often failing owing to damp or other causes. The fuze itself also required careful handling. The percussion grenades were thrown by means of the handle up to a distance of 60 paces. Leaden rings round the grenade flew in fragments upon impact to such a distance that they were dangerous to the thrower.

Grenades have a two-fold effect, produced by the force of the gases generated, and by splinters. The large bombs weighing from 3 to 4 lbs., with thick envelopes, had a great effect both from gases and splinters. These were used at Port Arthur. The effect of the smaller grenades used in field warfare was chiefly moral, although persons nearest the burst were killed by the gases, and others were severely hurt by splinters. The radius of action of these small grenades was from 20 to 30 paces.

The correspondent of the *Daily Mail* on the Japanese side at Port Arthur gives a striking account of the effect of large grenades at 203 Metre Hill. In one instance, 15 to 20 corpses lay in a heap, terribly mangled and in some instances with the uniforms torn off by the force of the explosion. All this was caused by one dynamite bomb. Further on the dead lay in hundreds, often in groups of from 10 to 15, mown down by the grenades. According to Osten-Sacken, the effect of a heavy bomb falling in a trench was such that the assault of the attacker was greatly facilitated. Similarly, a few grenades thrown among the assaulting troops may effectively repel them. In either case, troops take some time to recover from the mental shock.

Thus, light grenades of from 1 to 2 lbs., with thin envelopes, are quite sufficient for moral effect, and, being comparatively light, field troops may be equipped with them. The heavy grenades of from 3 to 4 lbs., with thick envelopes, are best for material effect, and should be reserved for fortress warfare.

At Port Arthur the Japanese frequently used grenades for the purpose of preparing the assault, especially when their opponents were sheltered in blindages or behind high parapets, as, for example, the 7th Regiment, when assaulting East Pan-lung-Shan on the 22nd August. On the previous day all its attacks had been repulsed, and only a small detachment managed to find cover in an entrenchment which had been evacuated by the Russians. Here the detachment passed the night. The following day the officers resolved to attack the

fort, as retreat was impossible. The engineers who were with the detachment had a few hand grenades and were sent in advance. They speedily scaled the parapet and threw their grenades. Some blindages and a machine gun were destroyed, and the fort was won after a fierce struggle.

The Japanese soldier, when assaulting, always had a few grenades with him, and carried his rifle in his left hand. Thus the assault itself was prepared by throwing hand grenades with a view to demoralising the enemy. This was well illustrated at 180 Metre Hill, which had two tiers of trenches and was armed with heavy and machine guns. On the 20th September the Japanese took the lower tier of trenches, but failed to capture the upper one. The next day, after a thorough artillery preparation, the 1st Regiment assaulted the upper tier. As soon as the Japanese arrived within bayonet distance they began throwing grenades. The Russians were completely demoralised, and the hill was taken after a brief struggle.

When fighting hand-to-hand both sides used grenades, throwing down their rifles for this purpose—*e.g.*, at 203 Metre Hill.

The Japanese also found them very useful for the purpose of clearing counterscarp galleries after crowning the glacis. Thus at Chi-kuan-shan on the 18th-31st October.

The Russians made great use of grenades for defending outer ditches which were without flank defence, *e.g.*, at the Shui-shih-yin Redoubts on the 19th September. A body of the enemy penetrated to the outer ditch, where our fire could not reach it, but it was subsequently destroyed by means of grenades thrown into the ditch. Grenades were generally used to repel assaults.

On the 23rd November the Japanese attempted to storm the "Trench of Death," which connected Forts Chi-kuan-shan and Ko-bu. Their parallel was within 50 paces of the trench, but could not be worked further because the ground was steep and the workers were destroyed by means of grenades thrown from small mortars. As soon as the enemy rushed forward with the bayonet they were met and repulsed by a hail of lead and hand-grenades.

Russian reconnoitring patrols at Port Arthur usually carried grenades.

During the winter halt on the Sha Ho the outposts were equipped with grenades for the purpose of dealing with minor hostile attacks, and when storming the Russian works at Mukden, each Japanese company had from 4 to 10 volunteer "grenadiers." These advanced with the parties told off to destroy obstacles and, when the latter were reached, threw their missiles into the Russian works. The Japanese engineers, thus covered, were then able to destroy the obstacles. The task of the Japanese was facilitated by the mistake made by the Russians in placing the obstacles too near the works.

The Japanese cavalry was also armed with grenades, and, when pursued by Russian cavalry, threw them under the horses of the latter.

We may, then, conclude that hand grenades can be used with advantage and under the conditions enumerated below:—

1. In the assault, to clear trenches strongly occupied by the defence, the grenades can be thrown when on the move, and producing both moral and material effect, may effectually prepare the assault and assist the stormers to cross the last 60 to 100 paces separating them from the enemy.
2. In hand-to-hand fighting.
3. To facilitate the destruction of artificial obstacles. Covering parties throw grenades, while engineers in rear carry out the actual demolition.
4. To drive the defender out of permanent fortifications. To bring up guns is impossible, to destroy the work is difficult. A well thrown grenade may kill all its defenders.
5. In the defence of fortified positions. When the stormers advance in waves, they may be brought to a standstill by the use of grenades.
6. In the defence of fortified works, to prevent the approach of parallels and saps beyond a certain point. The attacker, protected by sandbags and parapets, is almost invulnerable to rifle fire, and artillery fire cannot be employed.
7. To assist the defence of an outpost line when that of the enemy is near. Reconnoitring patrols may also be equipped with grenades.
8. Cavalry may carry them with advantage.

If the various uses of hand grenades enumerated above be recognised, it is obvious that troops should be carefully trained in the handling of them during time of peace.

THE QUESTION OF INFANTRY FIRING OVER THE HEADS OF INFANTRY.

(Translated from the *Militär-Wochenblatt.*)

THE considerations advanced in the article entitled "Infantry firing over the heads of infantry" (No. 33 of the *Militär-Wochenblatt*) impel me to utter some words of grave apprehension regarding the proposals made therein. Undoubtedly it would be very desirable if paragraph 340 of "Infantry Training,"[1] according to which the advance of a skirmishing line is rendered possible by means of fire delivered over it from commanding positions in rear, could be applied. How to obtain fire superiority over an opponent acting on the defensive is a problem which has not yet been solved.

The author of the article just referred to believes in the possibility of firing over the heads of troops even on level ground; he is of opinion that sufficient safety is afforded to the front line if the projectiles fired from the line in rear of it travel at a height of about 1 metre (3.28 feet) over the men in front.

He considers that it is admissible to build up two skirmishing lines—each of which is firing—one in rear of the other if, when:—

The rear line is 800 metres (880 yards) from the target, the front one is 700 (770 yards).

The rear line is 700 metres (770 yards) from the target, the front one is 550 (600 yards).

The rear line is 650 metres (700 yards) from the target, the front one is 450 (490 yards).

The rear line is 600 metres (660 yards) from the target, the front one is 350-400 (385-405 yards).

The rear line is 550 metres (590 yards) from the target, the front one is 250 (275 yards).

In fact he thinks that one might even deploy 3 lines at 800, 700 and 550 metres (880, 770 and 590 yards).

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[1] Where official Manuals are quoted, the German ones are referred to.—Translator.

I will test his proposal, assuming that it is carried out under the most propitious circumstances. The train of his reasoning is as follows:—

If fire is delivered with the 700 metres (770 yards) sight, for example, then, according to paragraph 23 of the Musketry Regulations, the mean height of the trajectory at a distance of 150 metres (165 yards) from the muzzle is 110 cm. (3 feet, 7 inches) over the line of sight. The vertical diameter of the cone of dispersion of the bullets at a distance of 150 metres (165 yards) from the muzzle measures about 15 cm. (5.8 inches), according to paragraph 24 of the Musketry Regulations; in other words, at a distance of 150 metres (165 yards) the lowest trajectory is 110 minus 7.5 cm. (3 feet, 7 inches, minus 2.9 inches), or 102.5 cm. (3 feet, 4.1 inches) higher than the line of sight, therefore no risk exists for the front line.

In reasoning thus account has not been taken of the following factors:—

1. In order to arrive at the dispersion given, only a limited number of shots—about 30 for each diagram of hits—were delivered. Besides this, a few shots were rather arbitrarily classed at "run-aways," and were not taken into account. Attention must be called to the fact that, according to the footnote to paragraph 74 of the Musketry Regulations, the measurements cited represent mean values; it cannot be expected that each rifle should give results at every distance within the limits of the dispersion laid down. In fact, according to paragraph 280 of the Musketry Regulations, during experimental shots a rifle is deemed satisfactory if the vertical diameter of its cone of dispersion at 150 metres (165 yards) from the muzzle, if only 3 shots are fired, is 20 cm. (7.8 inches). Even this dispersion is one-third greater than that mentioned in paragraph 24. If the dispersion for 3 shots is 20 cm. (7.8 inches), we may assume that, with a greater number of shots fired, it will be over 50 cm. (20 inches). The trajectory of the lowest shots would, therefore, be 110 minus 25 cm. (3 feet, 7 inches minus 10 inches), or 85 cm. (2 feet, 9 inches) above the front line. But the Musketry Regulations go on to say that amongst a mass of rifles there will be found some which throw high, others which throw low. Owing to this cause the figures giving the total dispersion are again increased.

2. Up to now we have not taken into consideration any errors on the firer's part, and have reckoned only with the most unavoidable errors in the arm. Each skirmisher, however, commits some errors in aiming and pressing the trigger, and these, however insignificant they may be, always increase the dispersion. Paragraph 26 of the Musketry Regulations gives data regarding the depth of the zone beaten by shots fired at the School of Musketry in fine weather and over level ground. When firing with the 700 metres' (770 yards) sight, the depth of

the zone within which half of all the shots fell, was 90 metres (98½ yards); therefore the entire beaten zone stretches over a depth of 360 metres (394 yards), *i.e.*, from 520 to 880 metres (578 to 962 yards).

When a unit fires at field firing, the dispersion naturally increases. According to the assumptions in my work, "Instruction in firing for Infantry," which are certainly none too unfavourable, the dispersion in depth of 50 per cent. of shots amounts to nearly 136 metres (149 yards); in other words, with an averagely strong company on a peace establishment, the bullets would fall anywhere within a space extending from 428 to 972 metres (468 to 1,064 yards).[1]

In real war at least twice as great a dispersion as this must be expected; the beaten zone, assuming its depth as 1,088 metres (1,190 yards) would, when firing with the 700 metres' (770 yards) sight, range from 156 to 1,244 metres (170 to 1,360 yards). Isolated bullets would, considering the flatness of the trajectory, fly between the skirmishers, and strike the ground 6 metres (20 feet) in front of the line, or even hit the men. The fact that at experiments in Belgium, which were carried out under conditions resembling those of actual war as nearly as possible, much greater dispersion took place, proves that the above calculation is not exaggerated.

3. Again, in arriving at the above conclusion, we have assumed that ranges have been correctly estimated, and especially that the foremost skirmishing line is not nearer to the target than 550 metres (600 yards). It is obvious that if it is at a less distance than this, and on the other hand, when the distance to the skirmishing line in rear becomes greater, the danger of bullets dropping amongst the front line of skirmishers increases.

I think it has been proved that firing over the heads of infantry by infantry under these conditions must *not* take place. Besides, very little is gained if a distance of only 100 to 200 metres (110 to 220 yards) is maintained between lines, for in this case on level ground both lines can be hit by the same shrapnel and by fire delivered from one party belonging to a hostile infantry force. In such a case a thick firing line is certainly preferable to two thin firing lines lying one behind the other. The losses will be about the same in each case, but with the first named disposition a great many drawbacks are avoided.

It is interesting, however, to consider when it may be permissible for a skirmishing line to fire from an elevated position over one situated in front of it. I am of opinion that this can be done when almost complete safety from accidents is afforded. I think, too, that one must distinguish here between attacker and defender. The latter will far oftener be in a position to utilize such fire, since his skirmishers need not shift

[1] 468 + [149 (mean 50 per cent. dispersion) × 4] = 1,064 yards.—Translator.

their positions; at the worst it is a question of withdrawing the front line, and in a prepared position, sheltered, or, to use a more correct term, concealed communications will have been provided from this line. If it lies in what is "dead ground" to the one in rear of it, that is if the front line cannot be seen from the position immediately in rear owing to the shape of the ground—then there is no question of danger for the front line; if necessary, the position of the rear line can be improved by the provision of a small breastwork, the necessary degree of slope being given to the parapet.

In case of an attack, the following conditions must be insisted upon:—

(a) The front line must lie at least 250 metres (275 yards) in front of that in rear of it so that both may not be hit by one discharge.

(b) The projectiles fired by the line in rear must—throughout a zone at least 300 metres (330 yards) deep—fly over the front line at such a height that this line can move in an upright position within the above zone, *i.e.*, the shortest shots from the rear line must, whilst travelling in the space lying between 250 metres (275 yards) and—at least—550 metres (600 yards), be more than 3 metres (10 feet) above the ground level.

Unfortunately, paragraph 23 of the Musketry Regulations gives only the height of bullets fired at ranges up to 700 metres (770 yards), these are below 2 metres (7 feet). For a further investigation I used the 6th edition of my "Instruction in Firing for Infantry."[1] According to this work, with the 900 metres' (1,000 yards) sight the height of trajectory within the space 300 metres to 750 metres (330 yards to 820 yards) is over 3 metres (10 feet). If the rear party uses this sight, then 50 per cent. of the shots will cover a zone 200 metres (220 yards) deep in round numbers (Appendix VII of my "Instruction in Firing," etc.), and the shortest shots will travel about 400 metres (450 yards) less than the mean, *i.e.*, they will hit the ground somewhere about 500 metres (550 yards) from the muzzle. Therefore, at a distance of 900 metres (1,000 yards) from the target, firing over the heads of infantry is not permissible.

If the 1,100 metres' (1,200 yards') sight be used, then the shortest shots may be expected to strike the ground at 800 metres (880 yards) from the firer (depth of zone covered by 50 per cent. of shots is 150 metres (170 yards), and total depth of beaten zone extends, therefore, from a distance of 788 to one of 1,416 metres (860 to one of 1,540 yards) from the muzzle).

The trajectory of a bullet which strikes the ground at 800 metres (880 yards), never rises 3 metres (10 feet) above the ground, consequently with this sight also shooting over the

[1] E. S. Mittler, "Königliche Hofbuchhandlung," Berlin, 4 marks; bound, 5·25 marks.

heads of men in front is impossible. It is only when firing with the 1,200 metres' (1,300 yards') sight that the shortest shots strike about 900 metres (980 yards) from the muzzle (depth of area covered by 50 per cent. of shots is 146 metres (160 yards); with this sight the height of trajectory between 250 and 750 metres (275 and 825 yards) is more than 3 metres (10 feet) above the ground.

The advance of a skirmishing line moving between 950 (1,200 minus 250) metres (1,045 (1,310 minus 275) yards) and 450 (1,200 minus 750) metres (485 (1,310 minus 825) yards), could, therefore, be supported by a line behind it, firing with the 1,200 metres' (1,300 yards') sight. Whether the effect of such fire will be great enough to warrant the drawbacks which it entails is a question the decision of which must be left to more expert judgment than mine.

With machine guns the matter is different. Here the dispersion is materially less, and they could perhaps continue their support longer.

Firing over the heads of one's own troops is always a doubtful undertaking. Artillerymen are very chary of adopting it, although at short distances the trajectories of their projectiles are more curved than those of bullets, and are, therefore, better adapted for firing over the heads of troops. In Austria, for example, firing over the heads of one's own troops in the field is only admissible when the projectile travels at least 10 metres (33 feet) above them. It is therefore prohibited at ranges under 1,500 metres (1,650 yards).

THE
ORGANISATION OF CYCLIST COMPANIES.

Précis of an article published in the *Militärische Presse mit Vedette*, 7th May, 1910.

NOW that the cycle is no longer only a means of recreation but is universally used as a means of communication, it is necessary to study its use for military purposes. At first it was regarded from a military point of view only as a valuable means of quickly distributing orders, etc., but gradually cyclists, especially in armies weak in cavalry, were attached to mounted patrols, and they proved distinctly successful in the work of reconnaissance. A further step in advance was the organisation of cyclist units of varying strength, about which widely divergent opinions were held in various countries. Indeed, the conflicting opinions regarding the tactical value of cyclist detachments will continue until experience in the field admits of definite conclusions being arrived at.

Italy and France were the first Continental countries in which cyclist detachments were organized, and consequently a certain amount of experience in the matter has been gained by these countries. It must not, however, be forgotten that in Italy the nature of the country and the extensive network of roads afford better opportunities for the employment of such detachments than is the case in other countries.

Considering first the principles on which cyclist units are organized: each such unit requires a few mounted men for its protection, and it follows that when contact with the enemy is possible or probable, the rate of marching of cavalry and cyclists must be the same. It is inadvisable to form cyclist battalions, for a variety of reasons, such as the difficulty of maintaining connection, the disproportion between the fighting capacity of a cyclist unit, the enormous length of the column when on the march, and the difficulty of directing it when moving at the rate of 6 to 8 miles an hour. All these considerations point to the fact that cyclists should be organized in bodies not greater than a company. The point where they can be best employed is with the reconnoitring cavalry; there they can render valuable aid.

It follows, therefore, that the cyclist companies should, for the purpose of instruction, be quartered at cavalry stations, and should be under the orders of commanders of cavalry

brigades and divisions. Machine guns should be allotted to cyclist companies in order to increase their fire power. When carrying out an attack on an advanced post of the enemy or a point of tactical importance, the whole company can never be in action at the same time, as a portion must always be held back to guard the cycles, it being impossible for a man to fire while carrying even the lightest and handiest cycle. If the attack succeeds, the escort to cycles rides forward, leading the cycles of the remainder of the company. It is obviously better to carry out the attack with a few men who can make good use of their rifles and of all cover afforded by the terrain, than with a larger body of men prevented from shooting well and taking cover by having to carry their cycles.

The tactical employment of cyclist companies is summed up as follows:—Cyclist units should be employed and led in accordance with the general principles which govern the employment of infantry. They must be trained to hold supporting positions, and also to occupy an extended line to conceal the action of their own cavalry, and further they should be trained to withdraw from action rapidly in order to occupy another and previously reconnoitred position with the object of making reconnaissance more difficult for the enemy. Although not well adapted for the offensive, the numerical weakness of cyclist units may often be concealed by boldness and activity. As a general principle they fight with the cycle left under cover and guarded by an escort, and cycles should be carried only when the ground is so bad that the cycles cannot even be wheeled.

Communication within a cyclist company which occupies a wide frontage, can usually be maintained by signals, a few special signals to show whether a movement is to be carried out on foot or on the cycle being added to those in use for infantry. A few men, range-finders, orderlies, etc., will always remain with the company commander, and these will be available to carry orders when necessary.

As regards the distance covered daily by cyclists, the latter will act in co-operation with cavalry, and consequently a greater distance than 36 to 42 miles should not be demanded, nor more than 6 or 7 hours in the saddle in one day. When in contact with the enemy an average daily distance of 30 miles only can be expected.

March formation will usually be 2 or 3 men abreast, the latter formation being employed when it is necessary to economize road space. For a column of 200 men the difference in space occupied by columns 2 abreast and 3 abreast is about 110 yards, but the march is more fatiguing with 3 men abreast.

When in action cyclists should usually work in parties of at least 10 men, and the peace strength of a company should be 135 to 140 men. As cyclists will generally be widely extended when in action, it follows that the non-commissioned officers and men must be carefully chosen and trained, and that all ranks should possess in a high degree the qualities of initiative

and self-reliance. All the men must, in addition, be in good training and physically fit, as a great strain is at times put upon the men, especially on the heart. On mobilization only the youngest reservists should be incorporated to bring cyclist companies to war strength, and casualties should invariably be filled by men accustomed to regular use of the cycle.

As cyclist companies will be working with cavalry, they may have, from time to time, to destroy bridges, etc., and a certain quantity of high explosives for hasty demolitions should therefore form part of their equipment.

The conditions which a military cycle should fulfil are next considered, the essentials being extreme lightness, combined with strength and standardization of all parts, so that repairs can be quickly effected. There should be 4 trained mechanics in each company, 1 per section, who should carry in wallets attached to the cycle the most necessary tools and material for effecting repairs. It will often be advisable to carry complete parts, *e.g.*, an extra pedal, chain, brake, etc., instead of a number of small parts, and in all cases an acetylene lamp should be available in order to carry out repairs at night.

Ammunition supply should be carried out by means of automobiles. This will in future be the regular means of carrying ammunition for cavalry divisions and brigades, and so an extra motor can without difficulty be added to carry ammunition for the cyclist company. Each cyclist should carry 200 rounds on the person and on the cycle, and another 200 rounds per man in the Automobile Ammunition Supply Column should suffice.

Similarly supplies should be carried in automobiles, and in the latter might also be taken a few spare parts, such as complete wheels and frames, which are too large to be carried on a cycle.

NAVAL NOTES.

Home. The following are the principal appointments which have been made :—

Vice-Admiral — Sir G. A. Callaghan, K.C.V.O., C.B., to Command of Second Division, Home Fleet. Rear-Admirals—T. H. M. Jerram to be Second-in-Command, Mediterranean Fleet; W. L. Grant for Special Service with Vice-Admiral Commanding 3rd and 4th Divisions, Home Fleet. Captains—W. H. Cowan, D.S.O., to *Newcastle*; Sir R. K. Arbuthnot, Bart., M.V.O., to *President* for Special Service. Commander—J. R. Segrave to *Pelorus*.

Royal Marine Light Infantry.—Colonels Commandant—F. G. Cotter to Portsmouth Division; J. R. Johnstone, C.B., to Depôt, Deal; J. F. Daniell to Chatham Division.

The first-class battleship *Dominion* paid off at Chatham on the 6th ult., and recommissioned the following day for a further term of service in the 2nd Division (Battle Squadron) of the Home Fleet.

The first-class armoured cruiser *King Alfred*, late flagship in China, paid off at Portsmouth on the 6th ult. and recommissioned on the following day for service as flagship in the 3rd Division (Devonport Sub-Division) of the Home Fleet. The *King Alfred* left Portsmouth on the 15th ult. for Plymouth, where she arrived the next day, and on the 17th ult. the flag of Rear-Admiral A. A. C. Galloway was transferred to her from the armoured cruiser *Sutlej*.

Naval Battle Practice, 1909.—The result of the battle practice of the Fleet in 1909, has been issued as a Parliamentary Paper [Cd. 5089]. The Admiralty have issued the same document from the Gunnery Branch [No. 470]. In a prefatory note the Admiralty state that the conditions of practice differed little from those of 1908, and that it is satisfactory to note the improvements in the results obtained. The following is an abstract of the results :—

Fleet.	Ships.	Guns.	Average points.	First ship.	Score.
China	5	70	348·68	*King Alfred* ...	510·4
1st Division Home Fleet and 1st Cruiser Squadron ...	13	154	293·63	*Boadicea* ...	541·66
Mediterranean and 6th Cruiser Squadron ...	13	181	195·56	*Canopus* ...	459·82
3rd Division Home Fleet ...	13	174	187·5	*Sutlej*	443·75
2nd Division Home Fleet and 2nd Cruiser Squadron	14	212	176·76	*Warrior*	320·31
Atlantic and 5th Cruiser Squadron	10	145	142·17	*Argyll*	401·78
Ships inside range	4	47	289·41		
Total 1909	72	983	216·78		
Total 1908	63	890	203·44		
Difference	+ 9	+ 93	+ 13·34		

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In order of merit the China unit of the Eastern Fleet comes first, with the *King Alfred* at the top and the *Bedford* second, the points being 510·4 and 312·5 respectively. The First Division of the Home Fleet and First Cruiser Squadron come next with the *Boadicea* at the top, with 541·66 points, and the *Bellerophon* and *Dreadnought* tying for second place, with 450 points. The Mediterranean Fleet and Sixth Cruiser Squadron is third in order of merit, with the *Canopus* at the top with 459·82 points, and the *Suffolk* second with 267·85 points. The Third Division of the Home Fleet, firing with nucleus crews in the same conditions as fully-manned ships, came fourth, the *Sutlej* being at the head of the list with 443·75 points, while the *Carnarvon*, second ship, made 383·92 points. The first ship of the Second Division of the Home Fleet and Second Cruiser Squadron was the *Warrior*, with 320·31 points. The *Hindustan* was first ship of the Second Division of the Home Fleet and Second Cruiser Squadron. The *Argyll* was leading ship of the Atlantic Fleet and Fifth Cruiser Squadron, with 401·78 points

The ships in Australia fired at a fixed target, and the *Pyramus* was best with 406·25 points. The ships on the Cape of Good Hope Station fired in the same circumstances, and the *Forte* was best with 325 points. The scouts fired at two targets, and the *Foresight* led with 357·1 points, while of the gunboats, which fired at a tossed target, the *Spanker* came first with 104·1 points.

Light Quick-Firing Gun Test and Destroyer Battle Practice.—The Admiralty issued recently two further returns in connection with the gunnery practices carried out in the fleet during 1909. One of these returns gives the result of the test of gunlayers with light quick-firing guns (Admiralty Gunnery Branch No. 468); the other the result of battle practice from torpedo boat destroyers (Admiralty Gunnery Branch No. 469). To each document is appended a prefatory note, in which the Lords of the Admiralty express their satisfaction at the improvement in the results as compared with those obtained in former years. It is also intimated that the awards of medals will be promulgated in due course.

Light Quick-Firing Gun Test.

The result of the test of the gunlayers with light quick-firing guns is prefaced by an abstract of the firing for five years, from which it is seen that the percentage of hits to rounds fired was: in 1906, 34·53; in 1907, 42·08; in 1908, 47·28; and last year, 50·13, thus showing satisfactory progress. The rate of accurate firing also shows improvement with all calibres of guns. With the 12-pounder gun, the heaviest used in the practice, the China Squadron stands first in order of merit, the *Kent* being the best ship in the squadron. The Home Fleet, Third Division, and Third Cruiser Squadron stands second, with the *Sentinel* the best ship in the fleet and in the Navy, 13·73 hits per minute having been made by her gunners. This is the nucleus crew division. The Home Fleet, First Division, and First Cruiser Squadron, stands third in order of merit, with the *Minotaur* as best ship.

With the lighter guns, the 6-pounder and 3-pounder, the Home Fleet, Third Division, and Third Cruiser Squadron, heads the list, with the

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Hecla as best ship. The China Squadron stands second, and the Mediterranean Fleet and Sixth Cruiser Squadron third, with the *Bedford* and *Duncan* as best ships respectively. Classified in order of merit of ships competing, the *Sentinel* is the top ship, with Leading Seaman H. Crispin as best shot. The *Foresight* is next, with Leading Seaman C. Coller as best shot, and it is of interest to note that this little vessel was third in order of merit in the return for 1908, with the same man as her best marksman. The third man in order of merit with the 12-pounder is Able Seaman A. Leach, of the *Kent*. The number of ships taking part in the practice was 68. With the lighter gun the *Hecla* heads the list, her best gunner being Able Seaman R. Hoggarth. The *Euryalus* comes next, with Able Seaman H. Nichol as the best shot, and the *Bedford* is third, with Able Seaman J. Hurley as the best shot. The number of ships firing was 70.

——	1905.	1906.	1907.	1908.	1909.
Number of Ships that fired	86	89	122	111	104
Number of Guns	1,118	1,421	1,898	1,384	1,407
Number of Hits...	2,228	4,666	7,462	6,120	7,157
Number of Misses	8,291	8,845	10.272	6,823	7,119
Percentage of Hits to Rounds fired ...	21·63	34·53	42·08	47·28	50·13
Hits per gun per Minute:—					
12-pounders	2·12	3·417	4·471	5 319	6·005
6- and 3- pounders (except Vickers).	1·97	3·358	3·640	4·507	4·191
3-pounders, Vickers	—	8·144	6·140	6·069	7·810

12-Pounder Guns.

Abstract, 1909.

Order of Merit.	Fleet or Squadron.	No. of Ships.	No. of Men Firing.	Hits per Minute.	Best Ship in Fleet.	Hits per Minute.
1	CHINA	4	36	9·182	*Kent*	11·32
2	Home Fleet, 3rd Division and Third Cruiser Squadron.	12	132	7·485	*SENTINEL* ...	13·73
3	Home Fleet, 1st Division and First Cruiser Squadron.	11	161	6·513	*Minotaur*	10·43
4	Home Fleet, 2nd Division and Second Cruiser Squadron.	11	136	6·225	*Forward*	8·65
5	Mediterranean and Sixth Cruiser Squadron.	12	137	5·152	*Exmouth* ...	7·53
6	Special Service, Tenders, &c.	6	88	4·995	*Britomart*... ...	6·55
7	Atlantic and Fifth Cruiser Squadron.	7	84	4·468	*Arrogant*	6·44
8	Australia	3	31	4·293	*Encounter*... ...	6·55
9	Cape of Good Hope	1	8	3·409	*Hermes*	3·41
10	East Indies	1	8	2·455	*Hyacinth*	2·45
	Total 1909 ...	68	771	6·005		
	Total 1908 ...	76	863	4·471		

NOTE.—Ships in capitals fired under special conditions for nucleus crew vessels.

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6- and 3-Pounder Guns (Except 3-Pounder Q.F. Vickers).

Abstract, 1909.

Order of Merit.	Fleet or Squadron.	No. of Ships.	No. of Men Firing.	Hits per Minute.	Best Ship in Fleet.	Hits per Minute.
1	Home Fleet, Third Division and Third Cruiser Squadron.	18	96	5·069	*HECLA* ...	12·00
2	China	5	22	5·008	*Bedford*	8·36
3	Mediterranean Fleet and Sixth Cruiser Squadron	12	58	4·834	*Duncan*	7·27
4	Detached duty	1	10	4·691	*Flora*	4 69
5	Atlantic Fleet and Fifth Cruiser Squadron ...	8	63	4·519	*Argyll*	7 12
6	Home Fleet, Second Division and Second Cruiser Squadron.	2	16	4·437	*Sapphire*... ..	4·50
7	Australia	5	44	4·116	*Challenger* ...	6·91
8	Home Fleet, First Division and First Cruiser Squadron.	6	40	3·900	*Bulwark* ...	6·18
9	Special Service, Tenders, etc.	8	30	3·164	*Clio*	6·00
10	Fourth Cruiser Squadron	2	18	1·879	*Indefatigable* ...	2·06
11	Cape of Good Hope ...	1	9	1·576	*Forte*	1·58
12	East Indies	2	8	1·558	*Proserpine* ...	2·18
	Total, 1909 ...	70	414	4·193		
	Total, 1908 ...	86	521	4·507		

Note.—Ships in capitals fired under special conditions for nucleus crew vessels.

Destroyer Battle Practice.—A tabular statement prefixed to this return shows that whereas 139 vessels fired 6,972 rounds in 1908 and made 4,066 hits, 149 vessels fired 7,896 rounds in 1909 and made 5,130 hits. The percentage of hits to rounds fired was thus raised from 58·32 in 1908 to 64·97 in 1909. In the abstract of firing, the Home Fleet Third Destroyer Flotilla stands first in order of merit; the First Destroyer Flotilla of the same fleet second; and the Mediterranean Destroyer Flotilla third. Classified in order of merit of vessels competing, torpedo boat No. 2 is first, the best shot being Able Seaman E. Culling. The destroyer *Hasty* is second, with Able Seaman R. Crampton and W. Humprey as her best shots. For third place three torpedo boats (Nos. 1, 30, and 25) are linked together, their best shots being Able Seaman G. Pocock, Able Seaman H. Maddaford, and Second-class Petty Officer H. Higgens respectively. The number of torpedo craft taking part in the exercise was 149.

France. The following are the principal promotions and appointments which have been made: Rear-Admiral—E. M. Amelot to be Major-General at Lorient. Capitaines de Vaisseau—C. E. Favereau, A. J. Bouxin to be Rear-Admirals; E. E. Gervais to *Jauréguiberry*; J. L. C. Girard La Barcerie to *Suffren*. Captaines de Frégate—

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E. F. Carré, J. E. Guilhon to be Capitaines de Vaisseau; L. J. Petit to *Latouche-Tréville*; A. A. De La Taste to *Friant*; A. P. Fougerousse to *Forbin*; J. M. Deschamps to *Arc* and command of Oran Torpedo Flotilla; J. F. Prouhet to *Surcouf*; P. P. Fournier to *Amiral-Gueydon*.—*Journal Officiel de la République Française*.

Re-naming of the Torpedo and Submarine Flotillas.—One of the last administrative acts of M. Pelletan, when Minister of Marine, was to change the designation of the flotillas of torpedo boats and submarines. The names chosen were not very appropriate, being those of the neighbouring sea, with the addition of a number. Thus there were two flotillas of the Channel, three of the Atlantic Ocean, and five of the Mediterranean, while the torpedo boats stationed at Saigon and Diego Suarez received the high-sounding title of flotillas of the China Sea and the Indian Ocean.

Admiral Boué de Lapeyrère, Minister of Marine, has now decided that in future the flotillas will simply be designated by the name of the port to which they are attached; thus there will be the flotillas of Cherbourg, of Brest, of Rochefort, etc., which will be much more simple.

The Naval Estimates in the Senate.—In the discussion on the Naval Estimates in the Senate, Admiral Boué de Lapeyrère has been as much applauded as he was in the Chamber, and has increased his reputation. After giving an explanation of the different points of the naval Budget, he said what he hoped to do was to give France a living fleet in such a state of training that the country may depend upon it under all circumstances. The discussion drifted into the consideration of discipline in the Mercantile Marine, intimately connected with the *personnel* of the French Navy through the working of the *Inscription Maritime*. It was said that the present state of discipline was nothing less than a scandal, and is doing great harm to French commerce, and particularly to the port of Marseilles, where it was stated the recent strike had caused a loss of from 80 to 100 million francs. Acts of indiscipline include such as refusing to work and obey orders, stokers leaving the fires, refusing to leave the port at the scheduled time, taking their kits ashore and quitting their ships without leave. The men are supported in their indiscipline by certain agitators in Parliament, who seek to assimilate them to ordinary tradesmen, encouraging the men to form unions, and advising them to strike. "Would you allow reservists and Territorial troops to form unions and go out on strike?" was asked by one of the speakers. The *Inscrits* cannot be assimilated to ordinary workmen.

M. Cheron, Parliamentary Under Secretary for the Navy, replied that he was resolved *coute que coute* to do everything possible to re-establish discipline in the Mercantile Marine, and said that the law of 1907 would be upheld and strictly carried out.

Launch.—The first-class battleship *Vergniaud* was launched at the "Chantiers de la Gironde," Bordeaux, on 12th April, and the ceremony of inaugurating a new dock in which she will be completed was performed at the same time. This latter, which is a new departure in the establishment of the Chantiers de la Gironde, can be used as a floating basin or as a dry dock. Up to the present it has been the custom for the firm to

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launch their ships as nearly complete as possible, and at the launch of the battleship *Verité* (14,875 tons) this was carried so far that she even had steam up in her boilers when she took the water, and was complete in every respect except her guns, her launching weight being 12,250 tons, the reason being that on account of the strong tidal current in the Garonne, great difficulty is experienced in completing a vessel in the river. In the case of the *Vergniaud*, however, her much larger tonnage would have made launching her in an equally forward state a very delicate operation. Her construction was, therefore, retarded to coincide with the completion of the new dock, and she will be finished in the new basin. The intention at first was to construct a simple basin with lock entrance to the river, but as the work proceeded the advantages of also making it available as a dry dock were so obvious that the plans were modified to admit of this being done.

Bordeaux, therefore, now possesses the largest dock on the Atlantic coast, the dimensions being: length, 181 metres (593·7 feet); breadth, 33 metres (108·2 feet); depth on sill at 5 metres (16·4 feet) rise of tide, 10 metres (32·8 feet). It can thus be used in the future by battleships of much larger dimensions than the *Vergniaud*. It is equipped with a travelling crane with a lifting power of 140 tons.

The *Vergniaud* is the last of the six battleships of the 1906 programme to take the water, and is distinguished from all foreign battleships of the same period by her high freeboard and the height at which she carries her guns above water. Vice-Admiral de Percin attended the launch on behalf of the Government, and everything passed off without a hitch.

Loss of the "Pluviôse."—The submersible *Pluviôse*, sunk with all hands off Calais on 26th May, by collision as she came to the surface with the Calais-Dover mail boat *Pas de Calais*, is the first of a series of 12 submersibles built to the plans of M. Laubeuf. She had gone through a number of experimental trials, and took part in the manœuvres of 3rd May to 11th June last year in the Channel and Atlantic Ocean. She was built at Cherbourg and launched in 1907. Her dimensions are: surface displacement, 398 tons; length, 51m. 12 (168 feet); beam, 4m. 97 (16 feet). She is supplied with steam machinery of 700-H.P. for surface cruising, and accumulators for under-water progress, her speed being 12 knots on the surface and 7 knots submerged. She is armed with 7 torpedo tubes, and her complement is 2 officers and 23 men.

On the sad occasion of her loss three officers were on board, the additional one being Capitaine de Frégate Prat, commanding the flotilla of submarines, who had only been appointed in April. He was 44 years of age, and had previously served as Chief of the Staff to Rear-Admiral Perrin on board the *d'Entrecasteaux* in the Far East.

Lieutenant Callot was the officer in command of the *Pluviôse*. He was in his 37th year, was appointed in June, 1909, and was considered a most experienced and promising officer.

The second in command was Ensign de Vaisseau Engel, who joined the *Pluviôse* in April, 1910. He was also considered a most promising officer, his name being on the list of those recommended for promotion.

On learning of the catastrophe, Admiral Boué de Lapeyrère, the Minister of Marine, immediately left Paris for Calais, where steps were

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immediately taken, under his personal superintendence and that of Vice-Admiral Bellue, the Maritime Prefect of Cherbourg, to raise the unfortunate vessel, the necessary lighters and appliances having been at once despatched from the dockyard at Cherbourg. The weather was bad, and considerable difficulty was experienced by the divers in fixing the chains from the lighters to the rings in the hull; but on 3rd June, however, it was found possible to lift her off the bottom, and she was towed in towards the shore until she grounded on a sand-bank some 1,200 yards from the piers in 38 feet of water. Operations were again delayed by the bad weather and the sinking during a gale of one of the pontoons on top of the submarine's hull, and it was not until 12th June that she was brought into the harbour, when the work of removing the bodies was at once commenced. This took much longer than was at first expected, as where the vessel lay, the hull was still completely covered at high water, and it was eventually found necessary to lift and bring her farther in, which was successfully accomplished on the 19th, the last bodies being removed on the 21st and conveyed to the sugar market, which had been converted into a *Chapelle Ardente*.

The national funeral of the victims took place at Calais on the 23rd, and was attended by the President, the Prime Minister, the Ministers of Marine and War, with other officials and the naval attachés of the various Powers.—*Le Temps* and *La Vie Maritime*.

Former Submarine Losses.—This is the third occasion upon which the French submarine flotilla has suffered grave disaster attended by serious loss of life. Not long after the foundering of the British A 8 off Plymouth in June, 1905, the French submarine *Farfadet*, while diving at Bizerta on 6th July of the same year, sank owing to the top of the conning-tower being improperly fastened. The water poured into the vessel, forcing the commander and two of his men out of the conning-tower, but drowning the other members of the crew, 14 in number. It was at Bizerta also that the second mishap occurred on 16th October, 1906, when the *Lutin*, a sister of the *Farfadet*, while exercising off the port, sank in 110 feet of water. She had made three successful dives, but when going down for the fourth time it was noticed that the fore part of the vessel was considerably higher in the water than the stern. Directly afterwards she sank and did not appear again. Assistance was sent from Malta, the battleship *Implacable* and the destroyer *Albatross* proceeding to the scene of the disaster with salvage appliances, and with the help of a Danish salvage steamer the submarine was raised and placed in dock, when it was found that there were several leaks in her stern. All her crew perished.

March 18th, 1904.—A 1 (British) sunk by collision outside Portsmouth Harbour, 11 lives lost.

June 20th, 1904.—*Delphin* (Russian) swamped and sunk at Kronstadt, 26 lives lost.

June 8th, 1905.—A 8 (British) sunk off Plymouth, 14 lives lost.

July 6th, 1905.—*Farfadet* (French) sunk off Bizerta, 14 lives lost.

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October 16th 1906.—*Lutin* (French) sunk, also off Bizerta, 13 drowned.

April 26th, 1909.—*Foca* (Italian) sunk by explosion, total lives lost 13.

July 14th, 1909.—C 11 (British) sunk by collision off Cromer, 13 lives lost.

April 15th, 1910.—No. 6 (Japanese) foundered during manœuvres in Hiroshima Bay.

United States.

A New Type of Torpedo Boat. — A Double-Hulled Boat with its Engines Entirely Below the Waterline. —A new type of war vessel, provided for by Congress in the Naval Appropriation Act of last year, will be officially tested by the United States Government at Boston within a few days. It is known as the subsurface torpedo boat, and is designed to be immune from the small-gun fire now relied upon as a protection against ordinary torpedo boats. It consists of a submarine hull, which contains all the machinery and torpedo armament, suspended from an unsinkable surface hull divided into compartments packed with cellulose. Last year's law authorizes the purchase of this boat, when the official trial shows that it fills requirements, and the construction under contract of two others of the same type. The boat has had a preliminary trial. Tams, Lemoine & Crane, the consulting architects, report that it easily made 18 knots an hour, thus exceeding the required speed by 2 knots.

Six tons is the weight of the vessel, and its length is 46 feet. The price which the government has agreed to pay is 22,500 dollars. The small subsurface boats can either be used for coast defence or they can be carried on board of the larger vessels in an armoured fleet. In time of action they can be launched and directed, by day or night, against the enemy's fleet, particularly for operations against ships lying under the protection of land fortifications or mine fields, where expensive battleships should not be risked, as they were at Manila, Santiago, and Port Arthur.

In the submarine hull of the new-style boat is an eight-cylinder gasoline engine of 150 horse-power. The explosive charge carried for use on hostile vessels is 1,000 pounds of guncotton. An armoured conning tower on the surface hull, communicating with the submarine hull, enables the nagivator to direct and control the boat's movements. Only two men are required on board.

It is estimated that a fleet of fifty of these subsurface torpedo boats will cost about as much as two or three destroyers or submarines. As their "cruising radius" is 200 miles, their principal function will probably be for the defence of ports and unguarded coast line.

The subsurface boat is to be operated in one of two ways. Either it may be steered within short torpedo range and aimed at its objective, the crew leaving it in lifeboats or buoys, or it may be fitted with a submerged bow torpedo tube to discharge the ordinary 18-inch torpedo.

For the firing of the high explosive use is made of an electrical firing circuit, which is actuated by a bow firing pin, but which is kept open and safe by a switch in the conning tower until the boat is deserted. It is also proposed to continue the firing circuit around the inner skin of the upper hull below the water line, so as to explode the charge if

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the boat should be rammed, and thus deter hostile boats from ramming. Also it is proposed to use on the engine sparking circuit a time switch, which will automatically break the sparking circuit and stop the engine and boat if it misses its objective.

The total government appropriation for boats of this type is 445,000 dollars. When the first is approved, the Navy Department is authorised to contract for two others, one more of the same size and one larger and faster—a 400,000 dollar "subsurface seagoing destroyer."

A year or two ago the Assistant Secretary of the Navy recommended the building of a number of small motor torpedo boats of approximately the same size as this, to be laid up on shore in peace time, for occasional practice runs by the naval reserve and for use by them in case of hostilities. The boats proposed were to be of 17½ knots speed, which is somewhat less than has been achieved by the present subsurface boat on its preliminary trials.—*Scientific American.*

Report of Chief Constructor.—Placing first in importance in navy yard improvements the providing of necessary drydock facilities, in which this country is sadly deficient, Chief Constructor Washington L. Capps, U.S.N., Chief of the Bureau of Construction and Repair, in his annual report, urges the completion as rapidly as possible of the dry docks at New York, Puget Sound and Pearl Harbour. The one at Mare Island is near completion. The building of other large docks should take precedence over all other navy yard improvements.

It is recommended that the Secretary of the Navy receive authority to utilize certain unexpended balances in the improvement of the navy yards, instead of covering them into the Treasury. It is strongly urged that quarters be provided in the New York Yard for the two senior assistants to the naval constructor, as they have to do much work outside of the regular office hours. Many other recommendations are made regarding buildings in this and other yards made obsolete by the consolidation, or on which alterations are necessary. At the Olongapo Station there should be at least six more officers' quarters if that is to be made the main station; otherwise two additional houses would suffice; the present annexes to the main quarters are wholly unsuited to the climate. The poor arrangement at Mare Island is shown by the fact that the vibration of the machines used in building the *Prometheus* so shook the building that draughtsmen could not do their work. Consolidation is reported to have effected a great saving at the Charleston (S.C.) Yard. Nothing more will be done about the building of the collier fleet on the Pacific coast until the facts are laid before Congress and action is taken thereupon by that body.

The Chief Constructor believes a gain would be effected if vessels were assigned to the yards for their periodical repairs in a manner that would evenly distribute such work throughout the year, and not over a very limited period. It is thought that a system will soon be devised by which vessels of the fleet may remain on their stations much longer than is now practicable. One of the most important factors in accomplishing this result would be the assignment of battleships in reserve to replace such battleships of the fleet as might require repairs at a navy yard in excess of those which could be effected during a maximum period of thirty days

United States.

in any one year. Such an arrangement would increase the efficiency of the fleet by permitting it to remain at sea, in an efficient cruising condition, much longer than is now possible. The efficiency of the navy yards, as well as the efficiency and economy of repair work on vessels in commission, would also be increased by eliminating the periodic congestions of work.

The joint estimates of the Bureau of Construction and Repair and Steam Engineering, under the heading of "Construction and Machinery," call for 24,520,755 dollars for the year 1910, and only 13,375,220 dollars for 1911; under the head of torpedo boats, the joint estimates are for 3,097,034 dollars for 1910, and 2,388,109 dollars for 1911. For colliers in 1911 the sum of 300,000 dollars is asked for. Increase in pay for the civil employees at the bureau and in the offices of superintending naval instructors is recommended.—*Army and Navy Journal.*

MILITARY NOTES.

THE KING.

His Majesty inspected on the 29th ult., in the grounds of Buckingham Palace, the whole regiment of Grenadier Guards, it being the first time in thirty years that the presence of the three battalions in London made such a parade possible. It had been the intention of the late King to have made this inspection, the 29th of May having been the date originally fixed on which it was to have been made.

The three battalions rendezvoused at the Wellington Barracks, and from there marched to the Palace. The regiment was under the command of Colonel R. G. Gordon-Gilmour, C.B., M.V.O., D.S.O.; the 1st Battalion was commanded by Lieut.-Colonel the Earl of Cavan, the 2nd by Colonel the Hon W. E. Cavendish, M.V.O., and the 3rd by Lieut.-Colonel H. G. Ruggles-Brise, and practically the entire force was on parade, 1,620 strong.

The regiment in full review order was drawn up on the lawn facing the Palace, the formation being line of quarter columns of double companies. Five paces intervals separated the battalions; the Colours in front of the centre of the line, and the band and drums five paces in rear of the centre. The space available was a level stretch of grass some 140 yards long by 120 yards deep.

His Royal Highness the Duke of Connaught, the Colonel of the Regiment, was present on parade, as also was Major-General A. E. Codrington, C.V.O., C.B., as commanding the London District.

The King, who has succeeded his father as Colonel-in-Chief of the regiment, wearing its uniform for the first time, arrived at the Palace, accompanied by the Queen, Princess Mary, Prince George and his suite, a little before eleven o'clock, and punctually as the clock struck eleven he left the Palace by the French windows of the Drawing Room, crossed the Terrace and passed down the steps to the saluting base, a Royal Salute being given and the National Anthem played. His Majesty at once proceeded to make a critical inspection of the men, accompanied

by the Duke of Connaught and the members of his Staff. The regiment next marched past the saluting base in slow time in column, and then in quick, after which the line was re-formed and the regiment advanced in review order and a Royal Salute given. The flanks of the line were then turned inwards, and the King, advancing to the centre, addressed the troops as follows :—

> "My dear father, our late beloved Sovereign, and your Colonel-in-Chief, had been looking forward to inspecting the whole regiment of Grenadier Guards, which had not been together in London for thirty years. As this, alas, was not to be, I have taken the earliest opportunity of seeing you on parade under the command of my uncle, the Duke of Connaught. Your smart appearance and steadiness under arms to-day are worthy of the great traditions of the regiment. I am indeed proud to be Colonel-in-Chief of the Grenadier Guards, in which my dear father served when he entered the Army, and it gives me great satisfaction to wear your uniform for the first time when the whole three battalions are on parade."

After the King's address, at the command of the Duke of Connaught, the men, removing their bearskins and placing them on their fixed bayonets, gave three hearty cheers for their Colonel-in-Chief. The officers were then called to the front and presented to the King, who conferred on Colonel Gordon-Gilmour the decoration of C.V.O., and that of M.V.O. on Lieut.-Colonels the Earl of Cavan and Ruggles-Brise. The regiment then formed fours and marched back to their barracks.

Home. The following are the principal appointments which have been made :—

Generals—Sir A. Hunter, K.C.B., D.S.O., to be Governor and Commander-in-Chief, Gibraltar; Sir Ian Hamilton, G.C.B., D.S.O., to be General Commanding-in-Chief in the Mediterranean and Inspector-General of the Oversea Forces. Major-Generals — Hugh S. Gough, C.B., to be Colonel 20th Hussars; J. S. Ewart, C.B., to be Adjutant-General to the Forces; Sir Henry S. Rawlinson, Bart., C.V.O., C.B., to command 3rd Division (Southern Command); Theodore E. Stephenson, C.B., to command the troops in the Straits Settlements; T. Perrott, C.B., to command the Royal Artillery at Gibraltar; Alexander N. Rochfort, C.B., C.M.G., to command the troops in Jersey; Colonel and Hon. Major-General Charles D. Cooper, C.B., to be Colonel, the Royal Dublin Fusiliers. Colonels—George M. Kirkpatrick to be Inspector-General of the Military Forces of the Commonwealth of Australia, with temporary rank of Major-General; L. N. Morland, C.B., D.S.O., to command 2nd Infantry Brigade (Aldershot Command), with temporary rank of Brigadier-General; Cecil F. N. Macready, C.B., to be Director of Personal Services at the War Office; James L. Irvine to be Commandant of the School of Military Engineering; G. H. Fowke to be an Assistant Adjutant-General at the War Office.

Territorial Force.—Colonel Francis R. Parkinson to command South Wales Brigade (Western Command).

Indian Army.—Major-General—Edward S. Hastings, C.B., D.S.O., to be Colonel of the 92nd Punjabis; J. B. Forster to command Quetta Infantry Brigade (Southern Army); R. Bannatine-Allason, C.B., to command Nowshera Brigade (Northern Army); H. Mansfield, C.B., to be

Home.

Director of Supplies and Transport. Colonel—Alexander H. Gordon, C.B., to be Director of Military Operations, with temporary rank of Brigadier-General.

Territorial Force Annual Return.—Introductory Notes.—

1. General Remarks.

The present Return relates to the year which ended on 30th September, 1909. During this year the strength of the Force rose from the 8,428 officers and 188,785 non-commissioned officers and men given in last year's return to the 9,652 officers and 260,389 non-commissioned officers and men given on page 96 of the present return.

By 1st October, 1909, the shortage as compared with the establishment had been reduced to 1,580 officers and 41,191 non-commissioned officers and men, the strength of officers being just under 86 per cent. of the establishment, and the strength of non-commissioned officers and men just over 86 per cent.

The Increase and Decrease Table on page 99 shows the factors which contributed to produce the increase of 71,604 non-commissioned officers and men during the year. It will be seen that in round numbers 110,000 recruits were taken, and 10,000 men with previous service. The chief items in the waste of 49,000 (excluding transfers between units) were "on termination of engagement" 32,000; "to Regular Army, Special Reserve or Navy" 7,000.

It will be seen that out of the 108,000 men serving on a one-year engagement on 1st October, 1908, only 32,000 left the force "on termination of engagement"; of the rest, about 5,000 left before the expiration of their engagement either to join the Regulars or for some other reason, and the remainder—about 71,000—re-engaged, nearly 20,000 for periods of two years and upwards.

The number serving on the different terms of engagement on 1st October, 1909, were roughly:—

One-year	53,500
Two-year	19,500
Three-year	12,250
Four-year	175,000

Of these, the men whose engagements expire during the year ending 1st October, 1910, are the 53,500 on a one-year engagement and roughly 12,000 of those on a two-year engagement.

We have therefore only about 65,500 who have to decide during the year between re-engagement and discharge as compared with the 108,000 on 1st October, 1908.

2. Districts and Counties.

The general improvement in the position of the Force is of course reflected in the figures for Districts and Counties. Thus, whereas last year the highest percentage of strength to establishment of non-commissioned officers and men, obtained in any district, was 73 per cent., on 1st October, 1909, the lowest district had 80 per cent. of its numbers, and three had obtained 90 per cent. or over, viz.:—No. 7 (South Midland)

Home-
95 per cent., No. 6 (North Midland) 91 per cent., and No. 2 (Lowland) 90 per cent.

The County table shows that the majority of County Associations are doing well. Out of a total of 94 counties, 32 have obtained over 90 per cent. of their numbers and 39 more over 80 per cent.; the remainder have obtained—fourteen over 70 per cent., seven over 60 per cent., and the last two 58 per cent. and just under 50 per cent. Five County Associations are allotted establishments of over 10,000 non-commissioned officers and men each; these have obtained the following percentages:—West Lancashire 90 per cent., the West Riding of Yorkshire 87 per cent., East Lancashire 86 per cent., London 85 per cent., and the City of London 82 per cent. Of those allotted between 5,000 and 10,000 the following have obtained over 90 per cent.:—Warwick 97 per cent., Stafford 94 per cent., Glasgow 92 per cent., and Durham 91 per cent. Of the smaller counties, the following have obtained 97 per cent. or over:—(i) those with over 1,000 to raise, Wilts 97 per cent., and Lanark 97 per cent.; (ii) those with less than 1,000 to raise, Nairn 100 per cent., Dumfries 99 per cent., Brecknock 98 per cent., Clackmannan 97 per cent., Linlithgow 97 per cent.

3. Individual Units.

The following table shows the percentage of strength to establishment in the different sections of each arm as compared with the percentage on 1st October, 1908, and also shows the number of units which are short of their establishment by not more than 2 per cent.:—

Arm.	Percentage (nearest whole number) of Strength to Establishment (N.C.Os. and Men).		Number of Units.	Number of Units with not less than 98 per cent. of their Establishment of N.C.Os. and Men on 1.10.09.
	1.10.09.	1.10.08.		
Yeomanry	97	85	56 regiments ...	32 regiments.
R.H.A.	81	53	14 batteries, 14 ammunition columns.	3 batteries, 3 ammunition columns.
R.F.A....	89	64	151 batteries, 55 ammunition columns, and 1 small arm section.	51 batteries 21 ammunition columns.
R.G.A.—				
Mountain	66	56	3 batteries and 1 ammunition column.	
Heavy Batteries ...	85	64	14 heavy batteries and 14 ammunition columns.	7 batteries and 4 ammunition columns.
Coast Defences... ...	74	56	16 groups of garrison companies & heavy batteries.	1 group.

Home.

INDIVIDUAL UNITS (contd.)

Arm.	Percentage (nearest whole number) of Strength to Establishment (N.C.O's. and Men).		Number of Units.	Number of Units with not less than 98 per cent. of their Establishment of N.C.O's. and Men. on 1.10.09.
	1.10.09.	1.10.08.		
R.E.—				
Divisional	88	77	28 field companies and 14 telegraph companies.	5 field companies.
Army Troops (Tel. Cos., &c.)	83	61	15 telegraph companies, 1 railway battalion, and 1 balloon company.	8 telegraph companies and 1 balloon company.
Fortress...	89	55	58 works and electric light companies.	12 companies.
Infantry	85	60	194 battalions, 10 cyclist battalions.	17 battalions, 3 cyclist battalions.
A.S.C....	86	57	14 mounted brigade transport and supply columns and 56 companies of divisional transport and supply columns.	2 mounted brigade transport and supply columns and 10 companies of divisional transport and supply columns.
R.A.M.C.—				
Mounted Brigade Field Ambulances and Field Ambulances.	93	66	14 mounted brigade field ambulances and 42 field ambulances.	9 mounted brigade field ambulances and 16 field ambulances.
General Hospitals ...	93	30	23 general hospitals.	10 general hospitals.
Sanitary Companies ...	73	36	2 sanitary companies.	
Men for other units ...	27	1		
Total—all arms ...	86	62		

This table shows that there has been a considerable improvement in all arms, the figures for the Yeomanry being particularly good.

The Infantry does not show a large number of battalions which are within 2 per cent. of their establishment, but another 31 battalions (including one cyclist) have got between 95 per cent. and 98 per cent.

The improvement in the Army Service Corps and the Royal Army Medical Corps is naturally particularly marked as they had made comparatively little progress by 1st October, 1908.

A good deal of ground still remains to be covered in the case of the men of the Royal Army Medical Corps required for water duties with combatant units. The smallness of the percentage of these so far obtained is due to the fact explained last year that the whole Royal Army Medical

Home.

Corps organization was a new creation. This being so, the Field Ambulances and Mounted Brigade Field Ambulances were raised first, and the men for water duties, the administration of whom presented some difficulties and required careful consideration, were left to be raised later. It will be seen that these have now taken a definite step forward, and when the importance of the duties required from the men becomes more fully realized, there should be no difficulty in filling up the establishment.

Germany. *Purchase of Horses for the Remount Service in* 1909.—According to official information, the purchase of horses for the German Army during 1909 has given satisfactory results. These results show that the development of automobilism and the breeding of heavy draught horses has not up to the present interfered with the breeding of half-thoroughbreds, which are purchased in preference by the Remount Committees.

The statistics show, moreover, that the number of mares reserved for breeding and of foals has increased each year in Germany, as well as the number of horse fairs. The result is that the number of horses submitted each year to the Committees for purchase is larger and the field of selection is much enlarged.

The following table gives the results obtained last year by the purchase Committees in Prussia, which is the breeding country from which almost all the horses required for the German Army are drawn :—

1. *Prussia.*

Province.	No. of Fairs held.	No. of Horses submitted.	No. of Horses purchased.	Percentage of Horses purchased.
East Prussia	257	12,667	6,562	52
West Prussia	33	1,409	489	35
Posen	53	1,953	728	37
Silesia	6	235	65	27
Brandenbourg	16	418	165	40
Pomerania	18	479	225	47
Hanover	53	2,712	1,250	46
Schleswig-Holstein	33	1,408	425	30
Rhenish Provinces	3	336	32	10
The two Mecklenbourgs	52	2,079	924	45
Oldenbourg	10	268	61	23
Totals (1909)	554	23,964	10,926	46
,, (1908)	529	23,820	10,949	46
,, (1907)	529	23,376	10,817	46
,, (1906)	529	22,954	10,704	47

2. *Bavaria.*

Bavaria has purchased in 1909, in her own territory, 350 remounts out of 612 submitted (57 per cent.); she bought in East Prussia 791 horses out of 939 submitted (84 per cent.); in Holstein, 248 out of 291 (86 per cent.). All the horses were from three to three and a half years old. Bavaria further purchased, for the artillery, 120 full-grown horses at Hamburg, and for the machine gun companies, 28 horses of age in Bavaria, and 52 in Holstein.

Germany.

The prices given were: 1,000 marks (£50) for young horses, 1,300 marks (£65) for full-grown artillery horses, and 1,430 marks (£71 10s.) for machine gun horses. The full-grown horses are the only ones purchased in open market.

3. *Saxony.*

Out of the 1,423 young horses offered to the Saxon Commission, 970 (that is, 68 per cent.) were purchased; 96 of these young horses came from Saxony itself, 763 were purchased in East Prussia, 13 in West Prussia, 18 in Hanover, and 80 in Holstein; 235 of these horses were bought in the open market, and 735 came direct from the breeding establishments.

As regards full-grown horses, 636 were offered to the Commission, and 510 (that is, 80 per cent.) were purchased; out of this number, only 4 came from Saxony itself, 322 came from East Prussia, 94 from Posen, and 90 from Holstein; 428 of these horses were purchased in the open market, while 82 came direct from the breeders.

The mean price for young horses paid by the Saxon Commission was 1,037 marks (£51 13s. 6d.); the mean price for a full-grown horse varied from 1,135 marks (£56 12s. 6d.) to 1,350 marks (£67 10s.).

4. *Wurtemburg.*

Wurtemburg draws its remount horses of 4 years and 4 years and a half of age from the Prussian remount depôts, an average of 255 horses per year, which are incorporated directly in the regiments, whilst the remounts for the artillery are purchased partly in Wurtemburg itself, partly in North Germany.

413 horses were offered to the Commission and 252 were purchased—that is, 61 per cent., the mean price being 1,069 marks (£53 4s. 6d.).

The total number of horses offered to the Remount Commissions in the whole of Germany was 28,478. The total number purchased was 14,247, or 50 per cent.

The distribution of these two figures between the principal breeding provinces was as follows:—

Province.	Horses offered to the Commissions.	Horses bought.	Percentage.
East Prussia	15,108	8,520	57
West Prussia	1,466	544	38
Posen	2,083	822	40
Holstein	2,145	1,069	50
Hanover	2,744	1,268	46

One shadow on the success attending the work of the Remount Commissions is the steady increase for some years past in the mean price which has had to be paid for the horses, as follows:—

In 1906	£50 0 0
1907	51 5 0
1908	52 5 0
1909	53 5 0

Sanitary Condition of the Horses in the German Army.—The statistical reports affirm anew that the horses of the Army are becoming more and more subject to diseases as the result of the excessive strain to which they are subjected when on service.

Germany

Some years ago the brigade manœuvres seldom commenced (even for cavalry patrols) before 7 a.m., and finished at 3 p.m. at the latest. In these days the horses are saddled at the dawn, and the day is drawing to a close while squadrons and batteries are still *en route* for their night quarters. The divisional and army corps manœuvres increase still more the demands and the strain upon them. Hunger and the bivouac in the open complete the enfeeblement of the horses, so that in many regiments it is true to say that the horses, after the manœuvres, are scarcely fit for field service (*felddienst-fähig*).

The winter season was formerly reserved for the work of the riding school and training. It is now broken into by winter exercises, cadre-tours and endurance trials and night exercises, which, as the result of the cold and the frost and the severe strain thus occasioned, exercise an unfavourable influence on the strength and feeding of the horses. In the summer comes the training in the camps of instruction, which is much more important and fatiguing than formerly, whilst the cavalry manœuvres, which come before the manœuvres properly so-called, still further try the strength of the horses. The inevitable consequences are the appearance and development of diseases, which are increasing in a disquieting manner.

The Inspector-General of Cavalry has suggested the following measures as remedies:—

1. An increase of the forage ration;
2. A diminution of the work done in the brigade and divisional manœuvres;
3. The abandonment of bivouacking in the open for the mounted troops.

—*Revue Militaire des Armées Etrangères.*

Recruiting Statistics for 1908.—The number of young men who reached the age for military service was 527,280. By adding those put back from 1907 (357,123), from 1906 (269,432), and from previous classes (44,354), the total of 1,198,189 men is obtained as the full results of the recruiting sources. The classification was made as follows:—

	Men.
Unfit for service	34,133
Exempt from service	836
Put back, emigrants, in excess	684,197
Enrolled in the Territorial Army—	
Combatants (*a*)	207,509
Non-combatants (*b*)	2,628
Enrolled in the Navy (*c*)	11,715
Assigned to the Recruiting Reserve—	
of the Army	90,318
of the Navy	2,327
Attached to the First Levy of the *Landsturm*	128,888
Entered at the military age as—	
Volunteers in the Army (*d*)	33,743
Entered at the Military age as—	
Volunteers in the Navy (*e*)	1,895
Total	1,198,189

Germany.

Among the numbers of the volunteers of military age present under the colours (*d* and *e*) are 11,357 one-year volunteers, of whom 10,576 are in the Army and 781 in the Navy.

The number of young men who enlisted in 1908 before reaching the age for military service was 25,515, of whom 23,333 are in the Army and 2,182 in the Navy.

Adding the figures mentioned under (*a*), (*b*), (*c*), (*d*), and (*e*) we get a total contingent of 257,490 men enrolled in 1908, of whom 243,880 were incorporated in the Army and 13,610 in the Navy.—*Bulletin de la Presse et de la Bibliographie Militaires.*

The Netherlands.

Machine Gun Detachments in the Dutch Army. (Translated Dutch Army Orders, 1910, p. 394.)—The new machine gun detachments will be formed on the 23rd March, 1910.

On or before the 16th March in each year (on the 23rd March in 1910), 4 militiamen will be selected by the regimental commander for service with the machine gun detachment from each infantry regiment of a division. Whenever possible, men suitable for the positions of assistant armourer and assistant saddler will be included in these numbers.

The commander of the field artillery regiment of a division will appoint each year 15 militiamen, who have been trained as drivers, for service with the machine gun detachment and in addition 2 militia sergeants directly after their promotion to this rank. The transfer of the militia drivers will take place on the 1st October.

In order that a sufficient *personnel* may always be immediately available for the detachment on mobilisation, the divisional commanders will allot to the detachment men from former levies of infantry regiments, and the non-commissioned officers and men from former levies of the field artillery regiments. A selection will be made for this purpose from those who have yet to come up for their annual training.

The commanders of the machine gun detachments will be appointed by the Minister for War on the recommendation of the field army commander. The lieutenants and the voluntarily enlisted non-commissioned officers will be appointed by divisional commanders, who will supervise generally their posting from, and re-posting to, regiments.

The surplus *personnel* of the machine gun detachments on mobilisation will be allotted as follows: infantry *personnel*, to a depôt battalion of one of the infantry regiments as ordered by the divisional commander; field artillery *personnel*, to the divisional field artillery regimental depôt.

Militiamen will join their respective detachments on mobilisation and for annual training.

Divisional commanders will arrange for the transfer, supply, and exchange of the necessary horses for the machine gun detachment from the cavalry regiment of the division.

Netherlands.

The equipment of the machine gun detachment *personnel* will be as follows (provisionally):—

Officers.—Sword (of the pattern in use by the corps or arm to which the officer belongs) and revolver.

Under officers.—Sword (L. No. 2) and revolver.

Corporals and men of the detachment.—Carbine (M. 95, No. 4). Each will, on service, carry 20 ball cartridges, No. 1, in two pouches of the cavalry pattern; bayonet, in scabbard, and frog (cyclists' pattern) worn on the ordinary infantry belt.

Drivers, orderlies and shoeing-smiths.—Sword (L. No. 2) and revolver.

Pending a decision as to the uniform to be worn by the *personnel* of machine gun detachments—certain of which will carry out experiments in this connection—officers, under officers and rank and file will for the present wear the uniform of the corps to which they belong and the newly appointed men of the detachments will be provided with uniform as worn by infantry regiments, with the exception that a grenade will be worn, instead of the regimental badge, on the tunic collar and shoulder pieces.

Stable jumpers (field artillery pattern) will be issued to these men instead of fatigue dress jumpers.

Every soldier belonging to a machine gun detachment is to be in possession of a cap (kepi).

The following must be in possession of the articles stated:—

All sergeants—2 stable jumpers (F.A. pattern). Sergeants coming from the infantry, in addition—1 pair riding pants, 1 pair leggings, 1 leather sword knot, and 2 pairs of spurs.

All corporals—1 pair of riding pants, 1 pair of leggings, and one pair of jack spurs.

Every non-commissioned officer and man not already in possession of the following is to have—1 stable kit bag, 1 curry comb, 1 mane comb, 1 sponge, 1 body brush, 1 forage cord. Sergeants and drivers (in addition)—1 corn sack and 2 nosebags.

Each detachment will carry the following articles of pioneer equipment—8 crosscut saws, 8 wire cutters, 12 infantry pattern shovels, and 4 hand axes.

The 1st and 2nd Machine Gun Detachments will be administered by the 2nd Regiment of Field Artillery and the Corps of Horse Artillery respectively.

The responsible authorities are hereby directed to carry out, or cause to be carried out, the above instructions in so far as they may apply.

(Sd.) W. Cool.

Netherlands.

APPENDIX A.

Establishment of a Machine Gun Detachment (Peace Footing).

Establishment.	Personnel.		Horses.	
	Officers.	Under Officers and other ranks.	Officers.	Troop.
Captain (Commander) ...	1 (*a*)	—	1	—
1st and 2nd Lieutenants ...	2 (*a*)	—	2 or 3	—
Sergeant-Majors	—	2 or 1	—	1
Sergeants, 1st Class	—	4 (*b*) 5	—	4
Sergeants	—	4 (*c*)	—	4
Corporals	—	8 (*d*)	—	—
Shoeingsmiths...	—	1 (*e*)	—	1
Militiamen. For the detachment	—	(*f*) (*g*)	—	—
Militiamen. Drivers	—	(*f*)	—	25
Militiamen. Batmen	—	3 (*h*)	—	—
Total	3	22 (*i*)	3 or 4	35

(*a*) An infantry officer. One of the lieutenants may as a special case be a cavalry officer.

(*b*) If desired, one S.M. only, in which case another under-officer is responsible for the administrative work. The U.O. thus detailed is given the use of a Government bicycle or draws bicycle allowance.

(*c*) If sufficient 1st class sergeants are not available the establishment of sergeants may be increased.

(*d*) Two 1st class sergeants may be posted from the mounted artillery. The remaining under officers will come from the infantry.

(*e*) Of the rank of corporal or sergeant.

(*f*) According to the number belonging to the detachment.

(*g*) Includes an assistant armourer and assistant saddler.

(*h*) If one of the lieutenants comes from the cavalry, 1 voluntarily enlisted man and 2 militiamen batmen.

(*i*) In addition to the militiamen.

APPENDIX B.

Establishment of a Machine Gun Detachment (War Footing).

Establishment.	Personnel.		Horses.		Vehicles.
	Officers.	Under officers and other ranks.	Officers.	Troop.	
Captain (Commander) ...	1	—	2	—	—
1st and 2nd Lieutenants ...	2	—	4	—	—
Sergeant-Majors	—	2 or 1	—	1	—
Sergeants, 1st Class ... Sergeants	—	11 (*a*) 12	—	11	—
Corporals	—	8	—	1	—
Shoeingsmiths	—	1	—	1	—
Men for the detachment and drivers	—	64 (*b*)	—	10 (*c*)	—
Batmen	—	3	—	3	—
Hospital orderlies	—	2	—	—	—
Guns	—	—	—	32	8
Ammunition wagons ...	—	—	—	16	4
Baggage and tool wagon ...	—	—	—	4	1
Forage wagon	—	—	—	4	1

(*a*) If desired, one S.M. only, in which case another under officer is responsible for the administrati ve work.

(*b*) Includes 28 drivers for the guns and wagons and other vehicles, 16 men for the detachment, 6 orderlies. 2 drivers for spare horses, and 12 spare numbers. An assistant armourer and assistant saddler are included, per section, among the spare numbers.

(*c*) Includes 6 horses for orderlies and 4 spare.

Spain.

Organisation of the Native Troops at Ceuta and Mélilla.—The Spanish Government has decided on the organisation to be adopted for the native troops in its North African possessions, a Royal Decree having been issued in January :—

1. *Mélilla.*—Three companies of native infantry will be raised at Mélilla in order to police the Guelaya territory. In addition, the native groups at present existing at Cabo de Agua and Restinga will form a mixed company of infantry and mounted men, charged with the same police duty in the Kebdana territory.

These companies will be commanded by officers of the Spanish Army, but each cadre is to include a native sub-lieutenant, or, failing one, a Spanish non-commissioned officer with a knowledge of the native language.

The *personnel* of these units will be recruited among the tribes of the country; the engagement will be for no settled period, and the service will be carried out among the tribes from which they come. The details of carrying out the duty will be fixed by regulation.

These native troops will, from the point of view of service and administration, be under the control of General Larréa, one of the Spanish officers most intimately acquainted with Moroccan affairs. The expenses which will be incurred for this purpose will be put down to the extraordinary credits for the campaign.

2. *Ceuta.*—In addition to its squadron of Moorish Chasseurs, the Volunteer Militia of Ceuta will comprise : a company of marines and two companies of Moorish riflemen (*moros tiradores*), under the orders of a lieut.-colonel. The total strength will be 18 officers, 18 non-commissioned officers, and 570 corporals and soldiers. The Spanish officers told off to serve in the two companies of native infantry will be proposed for selection to the Minister of War by the Governor of Ceuta from among the infantry captains and lieutenants who possess a sufficient knowledge of Arabic. The cadre of each company includes a native sub-lieutenant; this appointment will be given to the two senior Moorish sergeants best fitted for the duty, selected from the present company.

For the vacancies for native officers, who will be required later on, the following regulations are laid down :—

1. The appointments will be given to Moorish non-commissioned officers of the companies fulfilling the four following conditions :—

(*a*) They must have eight years' service, of which three at least must be in the rank of sergeant;

(*b*) They must be of irreproachable character;

(*c*) They must be noted for their attachment to Spain and have shown special fitness;

(*d*) Must have successfully passed a special examination.

2. For the preparation for this examination there will be instituted in the Militia a regimental course, which will be attended by the native sergeants who comply with the conditions (*a*), (*b*), and (*c*) indicated above; an officer will be selected to act as professor for the course, under the superintendence of the commanding officer. The programme of subjects will be the same as Spanish non-commissioned officers who are candidates for the rank of officer of the reserve.

Spain.

3. Each year, in the month of May, all the sergeants who have attended this preparatory course will undergo an examination before a Commission composed as follows :—

The General of Brigade, assistant to the Governor, as President;
A Colonel of the garrison;
The Lieut.-Colonel commanding the Militia;
The commandants of the two companies;
The officer who has been in charge of the preparatory course.

In order to obtain a certificate of fitness there must be a unanimity of votes for each candidate.

4. The nominations will take place as vacancies occur.

—*Revue Militaire des Armées Etrangères.*

United States.

The New 14th-inch Gun.—The new 14-inch gun and carriage that has been under construction at the Watertown Arsenal has been completed. This new gun marks a progressive step in coast defence ordnance. While it is no heavier nor more expensive than the 12-inch gun, it is calculated to have a far longer life. Its length is that of the 12-inch gun now used, which is 40 calibres. The powder chamber is even smaller than that of the 12-inch gun, yet while the latter carries a thousand pound projectile and has a muzzle velocity of 2,550 feet per second, the new gun carries a 1,600-pound projectile, with a muzzle velocity of 2,150 feet per second. The projectile for the 14-inch gun will carry a much heavier charge of high explosive, and will therefore deliver a blow of greater force. The relative power of the blow delivered by the two guns is practically as 65 to 74, or it may be said that the 14-inch gun hits about fifteen per cent. harder than the 12-inch gun. This power is gained somewhat at the expense of accuracy, as the 14-inch gun will require a higher trajectory. Yet this, in coast defence, is an element of disadvantage easily overcome where all possible ranges may be thoroughly worked out. Such a gun, of course, would be of little value aboard ship, where the instability of the gun foundation and the necessity of firing at ranges not precisely determined would be ever constant factors of inaccuracy.

As compared with the 12-inch gun, the 14-inch required somewhat more power in service, the projectile being so much heavier, but this has been nicely met by designing the carriage in such a way that the charge may be loaded and rammed while the gun is depressed. The carriage is a disappearing carriage, similar to the latest model of the 6-inch gun, and has a vertical cylinder on the axis of the counterweight, instead of a horizontal cylinder on the top of the chassis rails. The projectile, travelling less rapidly than that of the 12-inch gun and being heavier, is less subject to the resistance of the air, and with the charge used it is expected to show a decided gain in the power of the blow delivered for every hundred yards beyond the muzzle of the gun. With the high initial velocity of the projectile from the 12-inch gun there is now a constant factor of expense and disadvantage from erosion; as a matter of fact, but a very small percentage of guns now in use have required relining, but if used for any length of time, as for instance in case of actual war, at the high muzzle velocities which Coast Artillery commanders would be tempted to use, it is probably not extravagant to predict that a single engagement would wear

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out any of the 12-inch guns we now have. It is calculated that the new 14-inch gun may be fired from 250 to 280 times before any degree of impairment from erosion will appear, whereas eighty shots at the muzzle velocity prescribed would mark the life of our 12-inch guns.—*Army and Navy Journal.*

NAVAL AND MILITARY CALENDAR.

JUNE, 1910.

1st (W.) *Terra Nova* left the Thames for New Zealand *en route* for the Antarctic Expedition.

" " H.M.S. *Irresistible* paid off at Chatham.

3rd (F.) H.M.S. *Lancaster* left Sheerness for the Mediterranean.

4th (Sat.) His Majesty presented with Field Marshal's bâton by Field-Marshals of British Army.

6th (M.) H.M.S. *Dominion* paid off at Chatham.

" " H.M.S. *King Alfred* paid off at Portsmouth.

" " His Majesty inspected at Marlborough House the Naval Contingent which drew the Gun-carriage bearing body of King Edward from Windsor Station to St. George's Chapel and presented decorations and medals to officers and men.

" " Fiftieth Anniversary of the evacuation of Palermo by the Neapolitans and the formation of a Provisional Government.

7th (T.) H.M.S. *Dominion* recommissioned for Home Fleet.

" " H.M.S. *King Alfred* commissioned for service with the Third Division (Devonport Sub-Division) of the Home Fleet.

" " His Majesty inspected at Marlborough House the King's Company of the 1st Grenadiers, who were on special duty during the Lying-in-State of the late King, the Colour-sergeants of the Guards who formed the bearer-party, and the gun detachment of the BB Battery of R.H.A. who horsed the gun-carriage on which the coffin was carried through London, and presented decorations and medals to officers and men.

23rd (Th.) Fiftieth Anniversary of the First Review by Queen Victoria of the newly-created Volunteer Force, when 18,000 men marched past in Hyde Park.

24th (F.) Two-hundred and Sixtieth Anniversary of the birth of John Churchill First Duke of Marlborough.

25th (Sat.) Three-hundredth Anniversary of the arrival of Henry Hudson, the English Navigator, at the entrance of the Strait which now bears his name.

29th (W.) Review by His Majesty in the grounds of Buckingham Palace of the Grenadier Guards,

30th (Th.) Launch of First Class Battleship *Oldenburg* from Schichau Yard, Danzig, for German Navy.

Addendum to April Calendar.

12th (T.) Launch of First-class Battleship *Zrinyi* from the Stabilimento Tecnico, Trieste, for the Austrian Navy.

Addenda to May Calendar.

10th (T.) Launch of H.M.S. *Hercules* from Palmer's Yard, Jarrow-on-Tyne.

14th (Sat.) Launch of First-class Battleship *Florida* from New York Dockyard for U.S. Navy.

FOREIGN PERIODICALS.

NAVAL.

ARGENTINE REPUBLIC.—*Boletín del Centro Naval.* Buenos Aires: April, 1910.—"Coaling Stations on the South Coast." "New Method of Foretelling the Weather." "The Telefunken and Marconi Wireless Stations." "Proposals for Lighting the Argentine Coasts." "Heavy Gun Firing on Elevated Points of the Coast."

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens.* No. 7. Pola: July, 1910.—"The Technical Metal Handicrafts." "The Employment for Military Purposes of Airships and Aeroplanes." "The New Russian Battleships." "Life-saving Apparatus on board Submarines." "Graphic Calculation of Deviation Co-efficients, etc." "The Triple Turret." "On the Training of the Subordinate Engine-room *Personnel* in the English Navy." "Entry and Training of Candidates for the Engineering School at Venice."

BRAZIL.—*Revista Maritima Brazileira.* Rio de Janeiro: April, 1910.—"The Work Problem in our Dockyards." "Submarine Tactics." "The Japanese Navy." "Coast Defence Plan." "The Brazilian Navy." "New Fighting Naval Tactics." "Explosives in our Ships of War." "Adjustment of Telescopic Sights."

CHILI.—*Revista de Marina.* Valparaiso: March, 1910.—"Retirement among the *Personnel* of the Fleet." "Considerations on the Fighting Qualities of Battleships" (*concluded*). "Engineer Officers in the Great Navies" (*concluded*). "Naval Hygiene." "Resistance Trials of Krupp Naval Guns of Heavy Calibre." "Purchase of Coal."

FRANCE.—*Revue Maritime.* Paris: May, 1910.—"Memorial Presented to the King on the Reform of the Navy by Count D'Estaing. From a Manuscript (about 1776) preserved in the Archives of the Minister of Marine." "The Maritime Quarter of Nice in 1800." "On the Relative Problem of Magnetic Induction and the Compensation of the Compass." "On the Sensitiveness of the Compass." "Official History of the Russo-Japanese Naval War" (*continued*).

La Marine Française. Paris: June, 1910.—"Marine par-ci, Marine par-là: For the Reform against Orthodoxy." "The Brest-Transatlantique Company." "Destroyers with "Forced Lubrication."" "The Mechanicians of the Navy." "Torpedo Boats and Destroyers." "Everybody's Opinions: Administrative Reorganisation of the Dockyards." "Anomalies."

La Vie Maritime. Paris: 10th June, 1910.—"The Catastrophe of the *Pluviôse*." "The loss of the *Pluviôse*." "The Naval Manœuvres." "International Maritime Law." "Workmen in the Service of the State and of Private Industries." 25th June.—"The Truth about the Grand Naval Manœuvres." "The Third Theme of the Manœuvres." "An Abominable Joke." "The Re-floating of the *Pluviôse*." "A Great Fault." "Launch of a Submersible." "Guérigny's Folly." "International Maritime Law" (*continued*).

Le Yacht. Paris: 4th June, 1910.—"The Loss of the *Pluviôse*." "Yachting Notes." "The Portuguese Mine-Layer *Vulcano*." "*Apropos* of the Accident to the *Pluviôse*." "The Naval Manœuvres" (*continued*). 11th June.—"The Launching Distance of Automobile Torpedoes." "Yachting Notes." "The Naval Manœuvres" (*continued*). "The Return of the *Pourquoi-Pas*." 18th June.—"The Naval Manœuvres: First Phase." "Yachting Notes." "The Trials of the *Voltaire*." "The Naval Manœuvres" (*continued*). 25th June.—"The New Regulations for Service on Board." "Yachting Notes." "The Trials of the *Voltaire*." "The Naval Manœuvres" (*continued*).

La Moniteur de la Flotte. Paris: 4th June, 1910.—"The Loss of the *Pluviôse*." "The Grand Naval Manœuvres." 11th June.—"The *Jean Bart* Class." "The Naval Manœuvres" (*continued*). "The Loss of the *Pluviôse*." "Unification of the Pensions of Warrant Officers." "The Pay of the Men." 18th June.—"The *Pluviôse*." "The Naval Manœuvres" (*continued*). "The Navy in Parliament." 25th June.—"The Naval Manœuvres" (*concluded*). "The Naval Budget for 1911." "The *Pluviôse*."

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ITALY.—*Rivista Marittima.* Rome: April, 1910.—"Obituary: Vice-Admiral Carlo Mirabello." "On Behalf of the Maritime Industries." "A Complete Graphic Solution of the Problem of Internal Ballistics." "The Production and Tempering of Steel by the Electric Furnace." "Dirigibles and Aeroplanes as Instruments of War and as Targets." "The Oceanographic Museum at Monaco."

May, 1910.—"Obituary: Lieut.-General of the Naval Engineering Corps, Edoardo Masdea." "On the Tactical Employment of Torpedo Boats." "Garibaldi as a Seaman." "A Method of Testing the Mirrors of Projectors." *Supplement.*—"The Annual Estimates of Foreign Powers during the past Four Years (1907-1910)."

PORTUGAL. — *Revista Portugueza, Colonial e Maritima.* Lisbon: March, 1910.—"English Colonisation." "Considerations on the Administrative Division of Angola." "The Province of Angola." "The Island of

St. Thomé and Native Labour." "Genealogical and Biographical *Data* of some Fayal Families" (*continued*).

Annaes do Club Militar Naval. Lisbon: April, 1910.—"Voyage of Circumnavigation of the Cruiser *San Gabrielo*." "Our Naval Programme." "The Battleship of the Future." "The Entry, Education and Promotion of Officers in the Principal Navies" (*continued*).

SPAIN.—*Revista General de Marina.* Madrid: June, 1910.—"Association for the Advancement of Sciences." "The New Constructions." "Training in the Mercantile Marine." "The Construction, Management, and Organisation of Modern Ships of War" (*continued*). "A New System of Naval Tactics." "Official History of the Russo-Japanese Naval War."

UNITED STATES.—*United States Naval Institute Proceedings.* No. 2. Annapolis: June, 1910.—"U.S. Naval Training Service." "The Enlisted *Personnel*." "A Study of Naval Strategy." "Early Voyages of American Naval Vessels to the Orient." "Wilkes' and d'Urville's Discoveries in Wilkes' Land." "The Destroyer: Our Naval Weakness." "An Early "Globe-circling" Cruise." "A New Method for Determining the Final Diameter of a Ship." "The Motor Drive." "Notes on the Solution of the Triangle of Position without Trigonometrical Computation." "The Cutler-Hammer Manufacturing Company's Differential System of Turret Training Gear." "The U.S. Naval War College."

MILITARY.

AUSTRIA-HUNGARY.—*Danzer's Armee Zeitung.* Vienna: 2nd June, 1910.—"On the Question of the Italian University at Trieste." "Our *Archduke Franz Ferdinand* Class and the *Dreadnoughts* (the Launch of the *Zrinyi*)." 9th June.—"The Kaiser in Bosnia." "Asiatic Elections." "Election Assistants." "The Indebtedness of our Officers: Its Causes and the Remedy" (*continued*). 16th June.—"Travel Facilities on the Hungarian Railways." "For our New Battleships." "The Cretan Question." "The Indebtedness of our Officers: Its Causes and the Remedy" (*continued*). 23rd June.—"The Rejuvenating of the K.u.K. Generals' List." "The Army Musketry School." "Companies of Twenty Men."

Streffleurs Militärische Zeitschrift. Vienna: June, 1910.—"Army Inspector Lieut.-General Oskar Potiorek." "The Commanding Generals in Prague from 1621 up to the Present Time" (*continued*). "Contributions to the History of the Russo-Turkish War (1877-78)" (*continued*). "Machine Guns in the Infantry Fight." "The Fighting of Airships by Ordinary Guns." "The International Position of the Auditor in War." "Military Events in Turkey." "Communications from the Army School of Musketry."

Kavalleristische Monatshefte. Vienna: June, 1910.—"Cavalry Corps and Cavalry Divisions." "What is the Most Useful Armament of Modern Cavalry?" (*continued*). "Lance or Sabre." "Prize Riding and

Prize Jumping of the Field-Riding Society of the 14th Army Corps at Frieburg im Briesgau." "Retreat of the Russians after the Battle of Mukden." "Boots or Gaiters." "Protection of Machine Guns in Cavalry Fighting." "Tactical Problems for Cavalry Officers."

BELGIUM.—*Bulletin de la Presse et de la Bibliographie Militaires.* Brussels: 15th May, 1910.—"The Swedish Army." "The Grand French Manœuvres of the Bourbonnais in 1909" (*continued*). "The Battle of the Future" (*continued*). 31st May.—"The Grand French Manœuvres of the Bourbonnais in 1909" (*continued*). "The Swedish Army" (*continued*). "The Battle of the Future" (*continued*).

FRANCE.—*Journal des Sciences Militaires.* Paris: 1st June, 1910.—"Military Reform." "Aerial Navigation in Germany" (*concluded*). "Education and Instruction in the Infantry" (*continued*). "From Formalism to Enlightenment." "Some Ideas on the Reorganisation of the Army" (*concluded*). 15th June.—"The Army School." "Education and Instruction of the Infantry" (*continued*). "From Formalism to Enlightenment" (*concluded*). "About the New Decree on the Interior Service of the Regiment."

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GERMANY.—*Militär-Wochenblatt.* Berlin: 2nd June, 1910.—"Robert Koch: Obituary Notice." "A New Work on Prince Frederick Charles of Prussia." "The Navy List, 1910." "Military-Technical Review" (*continued*). 4th June.—"The Battle of the Three Arms and the Organisation of the Cavalry." "A New Work on Prince Frederick Charles of Prussia" (*continued*). "The Work of the Jäger Commandos (*Achóttnitschja*

Kománda) in the Russo-Japanese War." 7th June.—"The Commanding Generals of the German Army from 1889 to 1910" (*concluded*). "A New Work on Prince Frederick Charles of Prussia" (*continued*). "The Battle of the Three Arms and the Organisation of the Cavalry" (*continued*). 9th June.—"Life Assurance Institution for the Army and Navy." "Advanced Posts in Fortress Warfare." "The Battle of the Three Arms and the Organisation of the Cavalry" (*concluded*). "A New Work on Prince Frederick Charles of Prussia" (*concluded*). 11th June.—"Bavarian Army List for 1910." "Cavalry Perspectives through Russian Eyes." "Advanced Posts in Fortress War" (*concluded*). 14th June.—"Pepinerie, Frederick Wilhelm's Institute, Kaiser Wilhelm's Academy." "In the Dirigible Balloon." "Tactical Lessons from the War of 1864." "Cavalry Perspectives through Russian Eyes" (*continued*). 16th June.—"The Reorganisation of the Saxon Army of 1910." "Is the Establishment of Cavalry Divisions necessary in Peace?" "News from the Austrian Army." "Cavalry Perspectives through Russian Eyes" (*concluded*). 18th June.—"A Work of Field-Marshal Graf Haeseler." "Co-operation of the Field Artillery in Night Operations." "News from the Austrian Army" (*concluded*). 21st June.—"A Knight of the Royal Bavarian Military Max-Joseph Order during the Siege of Paris." "The Entrenchment of the Italians on the Battlefield of Madonna dello Scoperta." "The British-Indian General Staff." 23rd June.—One Hundred and Fifty Years Ago: The Fight at Landeshut, 23rd June, 1760." "The Proposal for new Army Regulations in Switzerland." 25th June.—"Two Tactical Problems for the Entrance Examination of the French Academy of War." "One Hundred and Fifty Years Ago" (*concluded*). "Heights of Burst." 28th June.—"On Cavalry." "Colic among Troop Horses." "The Russian Army." "The New Army Organisation in Spain." 30th June.—"The French Army: The Manœuvres, 1910." "South Tunisia: A Military and Military-Geographical Study."

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ITALY. — *Rivista di Artiglieria e Genio.* Rome: March, 1910.—"Economy in Works of Defence." "The Shrapnel of Medium-calibre Artillery." "The Automobile in the Army." "A Project for an Auto-

matically Balanced Aeroplane without a Rudder." "The Sterilization of Water by means of Ozone."

Rivista Militare Italiana. Rome: 16th May, 1910. — "Maritime Strategic Geography and Coast Defence" (*concluded*). "The Spanish War in Morocco." "A Contribution to the Revision of the Monographs on Geographic Regions." "Questions of Discipline and Command." "Battle Entrenchments in Italy and the Principal Nations." "The Cottian Alps: A Descriptive Essay." "The Training of the Company." "The Military Supply Service in Prussia with regard to the Peace Administration of the Army." "Cavalry Manœuvres in the Grand Manœuvres." "The Bersaglieri." "A Critical Note on Co-operation."

SPAIN.—*Revista Técnica de Infantería y Caballería.* Madrid: 1st May, 1910.—"Evolution of Military Law among Modern Nations" (*continued*). "Something about Gratuities." "The Infantry in the French Army." "Infantry Battle Communications." "The Grand Manœuvres in France and Germany during last Autumn." 15th May.—"Evolution of Military Law among Modern Nations" (*continued*). "The Infantry in the French Army" (*continued*). "Living Heroism." "Infantry." "Infantry Battle Communications" (*continued*). "Field Fortification by Infantry in France and Germany." "Gasconin: Chef d'Escadron of the French Artillery." "The Grand Manœuvres in France and Germany during last Autumn" (*continued*).

Revista Científico-Militar Biblioteca Militar. Barcelona: 10th May, 1910.—"Lessons of the Riff War" (*continued*). "The Tactics of Field Artillery." "Pay of the Roumanian Army." "Night Combats and Manœuvres." "Promotion in the Austrian Army." 25th June.—"Lessons of the Riff War" (*continued*). "The Employment of Field Artillery in Small Columns." "New Literature." "Extension of Front in Battle." "Aerostation in the German Army."

SWITZERLAND.—*Revue Militaire Suisse.* Lausanne: June, 1910.—"The New Organisation of the Army."

UNITED STATES.—*Journal of the United States Artillery.* Fort Monroe, Virginia: May-June, 1910.—"Operation of the Coast Artillery Power Plant." "Fire Control System for Batteries of the Intermediate Armament." "Military Education of Officers in Time of Peace." "Coast Artillery Reserves."

NOTICES OF BOOKS.

Official History of the Russo-Japanese War: Parts I.—IV. Prepared by the Historical Section of the Committee of Imperial Defence.

German Official Account of the Russo-Japanese War, Vols. I.—III. Authorised translation by KARL V. DONAT. London: Hugh Rees, Ltd.

Neither of these two official histories is as yet altogether complete, but each brings the record of the war down to the same point; each has been compiled by the leading military writers of either country from the reports of their own expert observers and from all other available material; and the two accounts appear to contain—whether separate or in combination—everything of value or of interest which for some considerable time to come is likely to be obtainable in regard to the conduct or to the issue of the tremendous operations described in these volumes. In the British history the course of the war is recounted in great detail, but it is devoid of any general scheme of comment—for some reason, which is not apparent, any intention to comment on the strategy employed or on the tactics displayed is disclaimed; but in spite of this somewhat disappointing deprivation of a quality which the student usually looks for in a professional work of this special scope and character, the interest of the book as a history does not materially suffer—partly by reason of the convincing manner in which events of such supreme importance are presented, and partly because here and there the enthusiasm of the soldier-writer appears to break through the dispassionate calm of the mere historian, and we are then assisted to a clearer understanding of the real reason for success or failure, and of how, had matters otherwise shaped themselves or been differently ordered, the one might well have given place to the other.

In the German Official Account, on the other hand, the presentment of the record of the operations, while careful, elaborate and accurate, is, it must be confessed, rather dry and even dull reading; and although it may certainly be *studied* with equal advantage with our own history, it can hardly be *read* with the same degree of real pleasure. Occasionally, moreover, there are indications and admissions that information—particularly from the Japanese side—has not been forthcoming; that the German historian's knowledge of the measures of Marshal Oyama was incomplete; that the exact wording of orders given has not always been established; and that the motives for particular actions are not yet sufficiently cleared up. Comment, therefore, while not withheld, is rather guarded in character, especially in the earlier volume, and, generally speaking, the same value cannot be ascribed to it which military students would ordinarily attach to the verdict of the highest professional tribunal in continental Europe. The first volume, moreover, and, to some extent, the second as well, rather suffers in the translation; Mr. von Donat, thorough as is his knowledge of our language, does not seem invariably to succeed in

conveying to his English readers either the exact meaning of the original or even one which is altogether clear to the student. It is always a matter of supreme difficulty to any but an Englishman to effect a true, without too literal, a translation of a foreign work into our language; but if Mr. von Donat has not always succeeded in his translation of the earlier of these volumes of the German official account of the war, the difficulty has been almost entirely overcome in the last and, so far, the most important of those which have as yet appeared.

In all these books, British and German, the main interest centres in those describing the operations prior to and culminating in the battle of Liao-yang—although in the English Official History the volume on the siege of Port Arthur—necessarily rather severely technical in character—runs the others very close. But then the battle of Liao-yang marked the supreme crisis of the struggle, impatiently awaited alike by the combatants themselves as by the peoples of the nations which kept the ring. Up to then the issue of the campaign was still uncertain; there were sound reasons for failure and acceptable excuses for retreat; Kuropatkin had hitherto exercised a merely vicarious command; his army had been engaged only *en petits paquets*. But when he turned to bay at Liao-yang, he had at last attained numerical superiority, he had himself selected his field of battle and had improved it by every technical means known to the science of modern war; but he had decided to bring about a decisive battle by defensive rather than by offensive operations, while he was over-anxious about his communications, and apportioned for the safeguarding of them forces which he could ill spare from his front, forgetting that for him, his cause and his army, the one thing needful was success in battle, that success could only be assured by putting every rifle into the fighting line, and that victory was itself the best protection for his rearward communications. On the other hand, we are reminded of Oyama that, formidable as was the task before him, "there were never, as far as has become known, any of those preparations for defeat which figured prominently in every Russian plan of battle," and we recognise that the boldness of his tactics almost invariably commanded success.

Both these histories are wholly admirable, together they probably convey an entirely accurate idea of all that occurred on either side, while by means of each we are assisted to form a judgment of the degree to which the national characteristics and military instinct and training of either belligerent affected the result of their operations. In both volumes the maps are abundant, and probably the best which have hitherto been produced to illustrate and accompany the record of any campaign; of the two sets, however, the British maps will probably be held to be by far the most generally satisfactory.

The Kent Territorial Forces and the Work that Confronts Them. By Colonel F. Spratt Bowring, C.B., R.E., C.C. Kent, Member of the Kent Territorial Association. Pamph. pp. 44. Clowes, London. Price 6d.

This pamphlet is written mainly to bring home to the men of Kent the reality, as well as the important part the Territorial Forces of their county will have to play in the event of an invasion. The one idea in

their minds must be meeting the enemy at the moment of attempted landing. The military problem may be divided into three distinct phases of field operations, which the Kent Forces have to set themselves to learn: 1. To be prepared to resist the enemy when in the act of attempting to land; 2. To hold the enemy in check should he have obtained a foothold, until reinforced, and then drive him back into the sea; 3. To be ready to move to the support of other forces contesting a landing. Towards these three ends the training, the constitution, the arming, the manœuvring, the equipment, and the field exercises must be directed. Such are the sound principles laid down, and sound ideas expounded by Colonel Spratt Bowring in this valuable little pamphlet. The distribution of the Territorial Forces and their work to protect their own county coast is then given in detail; and this is followed by an instructive narrative of the opening events of an imaginary campaign of invasion. This is just the sort of pamphlet which should be written by those competent to do it for every other coast county in the kingdom. It cannot fail to make the members of the Territorials really interested in their work. It converts abstract ideas into lessons of practical application.

Joan of Arc. By Father BERNARD VAUGHAN, S.I. (London: George Allen & Sons.)

This is a short sketch, in vigorous outline, of the marvellous career of the Maid of Orleans, and of the lessons ensampled by her life. It is not written primarily for soldiers, but none will be worse, and many will be better, for reading it. We heartily endorse Father Vaughan's "fervent hope that the perusal of the life story of Joan may stir in the hearts of readers the fires of true religion and true patriotism." The latter, at all events, is certainly much neglected, and woefully misunderstood in these days.

PRINCIPAL ADDITIONS TO LIBRARY DURING JUNE, 1910

The Riders of the Plains—A Record of the Royal North-West Mounted Police of Canada, 1873-1910. By A. L. HAYDON. 8vo. 10s. 6d. (Andrew Melrose.) London, 1910.

La Politique Navale et la Flotte Française. By Vice-Admiral E. FOURNIER. 8vo. 4s. 6d. (Berger-Levrault et Cie.) Paris, 1910.

Etude sur les Opérations du Maréchal Macdonald du 22 Août au 4 Septembre, 1813—*La Katzbach.* By X. 8vo. 8s. (R. Chapelot et Cie.) *Paris*, 1910.

Life of Richard Earl Howe. By Sir JOHN BARROW. 8vo. (Presented.) (John Murray.) London, 1838.

England and America, 1763 *to* 1783 — *The History of a Reaction.* By MARY A. M. MARKS. 2 vols. 8vo. (Presented.) (Brown, Langham & Co., Ltd.) London, 1907.

Historical Records of the Fifteenth, or King's Regiment of Light Dragoons, Hussars. Crown 8vo. (Presented.) Meerut, 1877.

Sea Power and other Studies. By Admiral Sir CYPRIAN BRIDGE, G.C.B. Crown 8vo. (Presented.) (Smith, Elder & Co.) London, 1910.

Handbook on Contagious and Infectious Diseases in Animals. Issued by the Quartermaster General's Division, India. Crown 8vo. (Presented.) Calcutta, 1910.

Cavalry in War and Peace. By General FREIHERR VON BERNHARDI. Translated from the German by Major G. T. M. BRIDGES, D.S.O., 4th (Royal Irish) Dragoon Guards. 8vo. 7s. 6d. (Presented.) (Hugh Rees, Ltd.) London, 1910.

Campaign of Napoleon in 1814. By Captain E. M. JONES, 20th Foot (for the Gentlemen Cadets of the Royal Military College, Sandhurst). 8vo. (William Webb.) York Town, 1868.

Army Organisation and Administration. By Captain H. L. PRITCHARD, D.S.O., R.E. 8vo. 10s. (Presented.) (William Clowes & Sons, Ltd.) London, 1910.

RECENT PUBLICATIONS OF MILITARY INTEREST.

COMPILED BY THE GENERAL STAFF, WAR OFFICE.

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PREFATORY NOTE.

This Pamphlet will be issued quarterly, in April, July, October and January. Its purpose is to draw the attention of Officers to British and Foreign publications of Military interest which are likely to assist them in their professional work. Copies of the pamphlet will be distributed to the Headquarters of Commands, Educational Establishments, Units and Reference Libraries.

PART II.

SECTION II.

MAGAZINE ARTICLES.

(For abbreviations, *see* page 975.)

AERIAL NAVIGATION.

The Flight of Birds and Ornithoplanes (conclusion). By Captain Etévé, French Engineers. R. du G., November, December.

Experiences with Dirigible Balloons in the German Manœuvres of 1909. I.R. (Suppl. 130), 1910, p. 24.

Dirigible Airships and their Use for Military Purposes. By Major G. Lüscher. S.Z.A.G., November, p. 424.

Military Aeronautics in France. M.W.B., 16th December, p. 3592.

Aeronautics, a Military Technical Review of the Year's Progress. M.W.B., 15th January, p. 135.

The Practical Employment of Dirigible Balloons and Mechanical Flying Machines. By Dr. F. Wächter. M.A.G., January, p. 1; February, p. 102.

The Military Use of Airships and Aeroplanes. (A lecture by Major-Gen. Schleyer to the Vienna Aviation Association.) O.M.Z., February, p. 207.

A Discussion on the Military Aspect of Dirigible Balloons and Aeroplanes. P.R.A.I., February, p. 497.

Dirigible Balloons and Special Ordnance for Attacking Them exhibited at Frankfurt International Exhibition. By Colonel Stone. P.R.A.I., December, p. 393.

Propeller Drives in Aeroplanes. E., 17th December, p. 829.

Some Limitations to the Use of Airships as Instruments of War. A.N.G., 18th December, p. 1214.

International Aeronautical Exhibition, Paris. By Lieuts. Beatty and Martin, R.E. R.E.J., January, p. 19, and February, p. 121.

Airships. By H. R. Ingersoll. N.M., January, p. 19.

The Design of Aeroplane Engines. E., 7th January, p. 1.

Aviation in 1909. By T. F. Farman. B. Mag., February, p. 206.

Evolution of Aerial Craft. By J. M. Fetherstonhaugh. C. Mag., February, p. 307.

Notes on Aeronautics. By Captain Kirke, R.A. P.U.S.I., January, p. 63.

The Attack of Dirigible Balloons and Aeroplanes. By Captain Sargeaunt, R.G.A. P.R.A.I., February, p. 493.

The Military Aspect of Dirigible Balloons and Aeroplanes. By Colonel Capper, C.B., R.E. P.R.A.I., January, p. 433.

Dirigible Airships. By Baron Roenne. R.E.J., March, p. 181.

ARTILLERY.

Experiments with Wire Guns in the United States. A.M.B., December, p. 459.

Determining the Height of Burst. By General Rohne. A.M.B., December, p. 452.

What Lessons are to be Drawn from the War in the Far East, 1904-05, regarding the Employment of Artillery in the Field? A.M.B., December, p. 397.

Artillery Lessons from this year's (German) Manœuvres. A.M.B., December, p. 443.

Field Firing for Artillery. S.Z.A.G., November, p. 409.

The Sighting Arrangements of the Krupp Guns for Fighting Airships. S.Z.A.G., November, p. 424.

The Rôle of Field Artillery in Fortress Warfare. M.W.B., 1st January, p. 12.

A Foreign Opinion of the French Artillery. (A translation from a German article by General Rohne.) R.d'A., October.

The French Camel Artillery in the Sahara (continued). By Captain L. Voinot. R.d'A., October.

The Training and Education of Non-Commissioned Officers in the Field Artillery. Anonymous. R.d'A., October.

Artillery Fire against Hostile Artillery which is Defiladed from View. By Lieut. P. Xambeu, French Artillery. R.d'A., November.

The Theory of the Employment of Short Guns. By Captain Tribout, French Artillery. R.d'A., November.

Artillery Tactics at Field Firing Practices. (A translation from a German article.) R.d'A., November.

Ranging so as to Secure more Rapid Effect with Field Artillery. M.W.B., 6th and 8th January, pp. 55 and 84.

A Method of Indirect Fire with Field Artillery. By Lieut.-Col. Dubois. R.T.C., January.

Observations on the Employment of Artillery in the Field. By Colonel Wing, C.B., R.A. P.R.A.I., December, p. 385.

Interior Ballistics after Lissak upon Ingalls. By Captain Hardcastle (late) R.A. P.R.A.I., December, p. 417.

Artillery Support of Infantry (concluded). By Major Molyneux, D.S.O. J.U.S.I., December, p. 1607.

Attack of Warships and Tables of Fire Effect. By Captain W. Enlick. U.S.A., November, December, p. 223.

Construction of Guns for Use against Airships (translated from the French). U.S.A., November, December, p. 303

The Distant and Close Attack in Fortress Warfare. By K. Ignatovitch. Inj., No. 11, p. 1507.

The Austrian 14-inch Siege Mortar considered in relation to Modern Fortification. By F. Golenkin. Inj., No. 11, p. 1545.

Fortress Artillery, the Tactics of (continuation). By Kapov. V.S. (I.), No. 12, 1909, p. 95.

The Distance of Artillery Positions from the Infantry Firing Line. By A. Smirnski. A.J., No. 12, 1909, p. 1315.

The Stereoscopic Method of Range-finding. By N. Boyaroglo. A.J., No. 12, 1909, p. 1321.

Determination by Photography of Errors of Range in Coast Artillery Practice. By Captain R. Veit, Austrian Field Artillery. M.A.G., January, p. 57.

Use of Howitzers and Mortars in the Field. By Captain Berger. O.M.Z., February, p. 213.

Guns for the Attack of Airships. O.M.Z., February, p. 247.

The Manœuvring of Artillery in co-operation with the other Arms. By Major-Gen. Manzoli. R.A.G., December.

The Field Gun of 1909. By Colonel Bethell, R.F.A. P.R.A.I., February, p. 511.

The Russian 3-inch (7·62 cm.) Mountain Gun. By Captains K. Padaur and Adolf Engel. M.A.G., February, p. 95.

Some Personal Impressions of the French Artillery. A.M.B., January, p. 36.

Theories of Field Artillery. By Major Profane. J.S.M., 15th February.

Indirect Fire Positions in Manchuria. Editorial, from Russian Publications. R.d'A., January.

Open and Covered Fire Positions. By Balck. N.M.B., 26th February, p 73; 5th March, p. 82.

Mounted Artillery, System Deport. R.A.G., January, p. 115 (1 plate).

Defensive Systems for Field Guns, as laid down in the Russian Engineering Manuals. R.A.G., January, p. 125 (2 plates).

Artillery Practice Camps. By Captain Guillet. R.M.I., February, p. 318.

CAVALRY.

A Reconnoitring Patrol in the Austro-Hungarian Corps Manœuvres, 1909. K.M., December, p. 1009.

The Training of Cavalry Machine Gun Detachments. By Captain Heinrich Viktorin. K.M., December, p. 1016.

Long Distance Riding. By Dr. Paul Goldbeck, Veterinary Service. K.M., December, p. 1036.

Remounts and the mounting of officers in the French and English Armies. By Major-Gen. Zobel. K.M., December, p. 1042.

The Regulations of 1910. General Principles (to be continued). Editorial. R.C., November.

Cavalry N.C.O.'s in the Field (to be continued). R.C., November.

A Study of the Development of the Cavalry Horse (continued). R.C., November.

A Scheme for Cavalry Reorganization. By Major R. R.C., November.

A Study of the New German Cavalry Regulations. By Jean d'Epée. J.S.M., 1st January.

National Method of Training in Fighting with the Sword and Lance. By Captain N. R.C., Vol. 50, December.

Cavalry Service. M.W.B., 8th January, p. 73.

The Fire Power of Large Bodies of Cavalry. By Lieut.-Gen. Karl Tersztyánsky de Nádas, Commanding Pozsony Cavalry Division, Austria-Hungary. K.M., January, p. 1.

Tactical Problems for Cavalry based upon actual examples in History. K.M., January, p. 56; February, p. 135.

Margueritte's Cavalry Attack at Sedan. By Major-Gen. Gradinger, Austro-Hungarian Army. K.M., January, p. 23.

Cavalry Attack upon Artillery, Tactically Illustrated from History. K.M., February, p. 115.

Cavalry Operations round the Flanks and Rear of an Opponent. By Major Hugo Kerchnawe, Austro-Hungarian General Staff. K.M., February, p. 122.

Japanese Cavalry Ride on Ice. Communicated by G. S. A.J.G., January, p. 475.

Cavalry in Frontier Warfare. By Captain Crombie, 23rd Cavalry. P.U.S.I., January, p. 109.

The Employment of Field Troops, R.E., with Cavalry. By Brevet Major Charles, R.E. P.U.S.I., January, p. 163.

The New Training Manual of the German Cavalry. By V. Oranovski. V.S. (I.), No. 1, 1910, p. 109; No. 2, 1910, p. 87.

Some Ideas regarding the Employment of Cavalry (to be continued). By R. D. J.S.M., 15th February.

The German Cavalry Carbines 88 and 98. A comparison. N.M.B., 5th March, p. 83.

FORTIFICATION AND MILITARY ENGINEERING.

The Preparation of Fortresses for Mine Warfare, based on the experiences of Port Arthur. M.A.G., December, p. 903.

How to Estimate the Capacity for Resistance of a Fortress for Home Defence. V.T.H., No. 1, 1910, p. 146.

Work Executed by French Engineers (2nd Company of the 20th Battalion) at the Camp de Mailly in 1908 and 1909 (with 8 diagrams). By Captain M. Winkler, French Engineers. R. du G., December.

The New French Instructions for Fortress Warfare. M.W.B., 13th and 15th January, pp. 117 and 142.

Regulations for the Construction of Cover for the German Foot Artillery. By Captain T. Unar, Engineer Staff. M.A.G., January, p. 28.

Employment of Engineers in Combination with the other Arms (continued). By Captain Camut. J.S.M., 15th January.

The Present State of the Question of Armoured Defences (continued). By F. Golenkin. Inj., No. 11, p. 1437.

Our Engineers in the Defence of Port Arthur. By V. Yakovlev. Inj., No. 11, p. 1481.

The Service of Communication. By V. Gregoriev. V.S. (I.), No. 12, 1909, p. 69.

The Coast Defences of European States (conclusion). (The Baltic Coast of Germany.) By M. Treidler. A.J., No. 12, 1909, p. 1333.

Faults in the Construction of Trenches in the Russian Army (conclusion). By G. T. V.S. (I.), No. 1, 1910, p. 99; No. 2, 1910, p. 77.

Fortress Warfare (with 2 sketches). By Captain Pappalardo. R.M.I., February.

HISTORICAL.

The Waterways of Napoleon I. M.W.B., 21st December, p. 3637.

Pawns on the Chess-board. (Gambetta's conduct of the War 1870-1871.) By Lieut.-Gen. v. d. Goltz. M.W.B., 18th December, p. 3611.

The Reorganization of the Prussian Army in the Years 1807 to 1812. M.W.B., Beiheft, 1909, p. 445.

Some Additions to the History of the Russo-Turkish Campaign of 1877-78. O.M.Z., December, p. 1797; February, p. 199.

Gneisenau. M.W.B., 23rd December, p. 3677.

The Operations in Albania, 1909. O.M.Z., January, p. 19.

Study of Battle of Sedan (continuation). R.C., November, December.

The Struggles round Youhountoun in the Battle of Moukden. By Lieut.-Col. Balck. I.R. (Suppl. 130), 1910, p. 1.

The Armies of Louis XIV. in 1674. R.H., vol. 37, January, February.

The War Office in the Year IV. (French Republic). R.H., vol. 37, January, February.

The 1870-71 War—National Defence in the Provinces. R.H., December, January, February.

A Memoir by Hoche on the State of the French Army in the Year V. (1797). R.H., December.

The Early Stages of the Campaign in North China in 1900. By Lieut. Fabiani. R.T.C., November, December.

Unpublished Letters of Napoleon I. (continued). R.H., December.

The Covering of a Fortress in 1815 (continued). By Captain Blaison L.S.M., 1st, 15th December, 1st January, 1st February.

Fragments from the Memoirs and Military Writings of Field-Marshal Count v. Moltke. V.T.H., 1910, No. 1, p. 1.

The Dromedary Corps in Egypt under Napoleon I. (conclusion). French General Staff (P.G.). R.H., December.

The Campaign of 1813: The Preliminaries (continued). French General Staff (F.R.). R.H., December, January, February.

A Feat of Arms of the Army of Catalonia in July, 1813. French General Staff (V.L.). R.H., December.

The French Mitrailleuse in 1870. R.H., vol. 38, January.

The Final Struggle for 203 Metre Hill at Port Arthur (concluded). (Translation of an article by Staff-Captain Koshtinshko.) R.E.J., January, p. 41; February, p. 129.

Emile Ollivier and the War of 1870. By Frederick Lawton. F. Rev., January, p. 113.

The Story of the Army Surgeon and the Care of the Sick and Wounded in the British Army, from 1660 to 1688. By Major Howell, R.A.M.C. J.R.A.M., January, p. 81.

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The Incorporation of the Priamur and Ussuri Country and the Island of Sakhalin in the Russian Empire (conclusion). By G. Timchenko-Ruban. V.S. (I.), No. 12, 1909, p. 181.

The Russo-Swedish War, 1808-1809 (conclusion). By P. A. Nive. V.S. (I.), No. 12, 1909, p. 1.

The Defence of Sakhalin in the Russo-Japanese War, 1904-05 (conclusion). By A. E. V. V.S. (I.), No. 12, 1909, p. 25.

The Vth East Siberian Rifle Brigade at Kinchow and Port Arthur (conclusion). By N. Tretyakov. V.S. (I.), No. 12, 1909, p. 53.

Port Arthur: a Diary of Events from 9th February, 1904, to 5th January, 1905. By N. Pobilevski. V.S. (I.), No. 1, 1910, p. 71; No. 2, 1910, p. 43.

The Final Subjugation of the Eastern Caucasus. By N. Baratov. V.S. (I.), No. 1, 1910, p. 1.

The Eastern Campaigns, 1853-56. By A. Zaionchkovski. V.S. (I.), No. 1, 1910, p. 17; No. 2, 1910, p. 1.

The Invasions of 1814-15 and 1870 at Montargis. By Captain A. Ledent. L.S.M., 1st, 15th December, and 1st February.

The Spaniards in Marocco. By General de Torcy. R.M.G., December.

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Medical Service in Campaign. By Major Paul F. Straub, Medical Corps, U.S. Army. J.A.M.S., vol. 25, 1909.

Medical Service with Philippine Scouts. By Major Elbert E. Persons, Medical Corps, U.S. Army. J.A.M.S., vol. 25, 1909.

Medical Equipment and Supplies for the Organized Militia. By Major C. R. Darnall, Medical Corps, U.S. Army. J.A.M.S., vol. 25, 1909.

A Form for obtaining Sanitary Camps. By Major William R. Davidson, Medical Corps, Indiana National Guard. J.A.M.S., vol. 25, 1909.

Translation from Military Surgeons' Reference Book and an Aid to Solution of Sanitary Tactical Problems. By L. Andrianoff and B. Tolushkin. Problems 1, 3 and 4. J.A.M.S., vol. 25, 1909.

Collection of Wounded on the Battlefield. By Dr. Berthier J.S.M., 15th January.

The Effect of the Two Years' Term of Service from the Medical Point of View. By Surgeon-Captain Consiglio. R.M.I., February, p. 325.

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The Military Efforts of Germany. Editorial. J.S.M., 1st January.

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Some Notes on the Spanish Army. By Lieut. Blin. L.S.M., 15th February.

A Practical Study of the Functions of an Intelligence Branch in War (to be continued). By Captain de Rudeval. L.S.M., 15th February.

Automatic Rifles: their Desiderata. French General Staff. L.R.I., 15th February.

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The Use of Pointed Rifle Bullets in Spain (to be continued). (Translated from Spanish by M. Ayrolles.) R.d'A., January.

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The Operations round Melilla in 1909 (to be continued). French General Staff. R.M.E., February.

The New Organization of National Defence in Denmark (conclusion). French General Staff. R.M.E., February.

The New Belgian Military Law of the 14th of December, 1909. French General Staff. R.M.E., February.

The Recognition of Warships. By. H. R. Ingersoll. N.M., March, p. 233.

The Moral of an Army. By a British Officer. N.R., March.

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Administration and Accounts in the Field (continued). By Captain Alizon. R.I.M., November.

War and Compulsory Service (to be continued). By Colonel Sainte-Chapelle. J.S.M., 15th December, 15th January, 15th February.

The Japanese Army in 1908 (concluded). (Translated by permission from R.M.E.) J.U.S.I., December, p. 1618.

General Principles of Organization and Equipment, Royal Engineers (continued). By Captain Harvey, late R.E. R.E.J., February, p. 83; March, p. 165.

The Supply of Clothing to the Troops in the War of 1904-5 (conclusion). By V. Nedzvyetski. I.J., No. 12, 1909, p. 1.

The Soldier's Boots. By Captain Toropov. I.J., No. 12, 1909, p. 57.

Organization of the Audit Department in the Austro-Hungarian Army. By Milvukov. I.J., No. 12, 1909, p. 23.

Fundamental Principles of the Laws of Organization of Armies (continued). By Colonel X. L.S.M., 1st, 15th December, and 1st January.

Notes on Lines of Communication; the Upkeep of an Army in the Field. By Captain W. Wachtel, Austro-Hungarian General Staff. O.M.Z., December, p. 1953.

The Reorganization of the Russian General Staff. M.W.B., 1st January, p. 16.

The Question of Selection in an Army. By M. Saint-Alban. J.S.M., 1st January.

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The Military Forces of Persia. Contributed by the General Staff. J.U.S.I., January, p. 88.

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The Development of Germany. B.Mag., January, p. 1.

The Declaration of London. By Professor John Westlake. N.C., March.

The Naval Policy of France. M. Jacques Dorobantz. Q.D., 16th February.

The "Yellow Peril" in the Far Eastern Possessions of Russia. By L. Bolkhovitnikov. V.S. (I), No. 2, 1910, p. 161.

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Infantry Batteries, *i.e.*, Batteries of Artillery Acting in Close Support of Infantry (conclusion). By Captain Bernache-Assolant. L.R.I., 15th December.

The Grand Manœuvres of the British Army in 1909. French General Staff. R.M.E., December.

The Manœuvres of the American Militia in 1909. French General Staff. R.M.E., December.

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The Employment of Engineers in Co-operation with the other Arms (to be continued). By Captain Camut. J.S.M., 1st January.

The Tactical and Moral Importance of the Depth of the Zone swept by Infantry Fire. By Major Immanuel. M.W.B., 4th January, p. 29.

German Tactics. Night Operations. By "A.H." J.S.M., 15th December.

A Strategical Study of the Campaign of 1800 in Italy (continued). By Colonel Lalubin. L.S.M., 15th December, 1st January, and 1st February.

Criticisms of an Old Infantry Soldier on the Manœuvres of the 21st Army Corps (conclusion). L.S.M., 15th December, and 1st January.

The British Army in a European War (conclusion). By General H. Langlois. R.M.G., November.

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Artillery and Infantry Fire on Land and Sea. By Lieut.-Col. Boissonnet. R.M.G., November.

The Great Manœuvres of the Austro-Hungarian Army in 1909. M.W.B., 4th January, p. 34.

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The Distant and Close Attack in Fortress Warfare. By K. Ignatovich. Inj., No. 11, p. 1507.

The Service of Communication. By V. Gregoriev. V.S. (I), No. 12, 1909, p. 69.

The Distance of Artillery Positions from the Infantry Firing Line. By A. Smirnski. A.T., No. 12, 1909, p. 1315.

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Infantry Tactics in the Last Two Wars. By Captain Lorenzo. R.M.I., January and February.

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The Japanese in Manchuria: a strategical study (to be continued). By Lieut.-Col. Cordonnier. L.R.I., 15th February.

A Study of the Tactical Employment of Infantry Machine Guns (to be continued). By Lieut. Vichier-Guerre. L.R.I., 15th February.

Study of the Tactical Scheme at the Entrance Examination for the French Staff College, 1910. R.M.G., December.

Strategical Situation at the Opening of the 1870 Campaign. By Major Defrasse. R.M.G., December.

The Employment of Machine Guns in the Field. Abridged from O.M.Z., May, 1909. By the General Staff. J.U.S.I., February.

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Communications from the Austro-Hungarian School of Musketry. Description of a Tactical Shooting Exercise Carried out at the School. O.M.Z., February, p. 251.

The Japanese Field Service Regulations (to be continued). Translated into French by Colonel Corvisart. B.P.B.M., 15th and 30th November.

Mounted Training of Field Artillery in the Winter Months. M.W.B., 23rd December, p. 3683.

Individual Training for Movements in the Dark. M.W.B., 30th December, p. 3781.

The Conduct and Direction of Staff Rides and Tours. V.T.H., 1st number, 1910, p. 1.

The New (German) Musketry Regulations for the Infantry. By Rohne. J.D.A.M., January, p. 19.

The 1910 Training Manual (continuation). R.C., vol. 50, December.

The 1909 Manœuvres of Foreign Armies (continued). E, Turkey; F, England; G, Belgium. O.M.Z., January, p. 59.

Military Training of Youths and Voluntary Rifle Practice. By Captain Wollinger. O.M.Z., January, p. 85.

Amendments (Nos. 29 to 33) to the German Infantry Training Manual. M.W.B., 14th December, p. 3573.

The Grand Manœuvres of 1909 in Belgium. Editorial. L.B.M., 12th and 19th December.

The Grand Cavalry Manœuvres of 1908 in Belgium. Editorial. L.B.M., 12th December.

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The Work of the Hand in the Training of Horses. By Captain Lauffer. K.M., February, p. 131.

The Training of Horses for Long-distance Riding. By Dr. P. Goldbeck, Veterinary Staff. K.M., February, p. 138.

The Educational Value of Mistakes. By Captain Jones. A.S.C., January, p. 459.

Musketry Tests in the French Army. By Major Gracy. L.R.I., 15th December.

Prize Shooting between Russian Machine-gun Sections. (Translated from the Russian by Major Painvin). L.R.I., 15th December.

Comparison of the New German and British Musketry Regulations. M.W.B., 15th February, p. 481.

Attack Exercises. M.W.B., 8th February, p. 415.

Principles of Battle Training in the New Japanese Infantry Regulations of November, 1909. M.W.B., 10th February, p. 435.

Training of Orderlies in Finding their Way by Night. M.W.B., 12th February, p. 465.

The Principles of a Rational System of Gymnastic Training (to be continued). By Dr. Wibin, Belgian Medical Service. B.P.B.M., 15th February.

Physical Training as a Subject of Instruction. By A. D. Butovski. V.S. (I), No. 2, 1910, p. 57.

Trained and Untrained Troops. By Colonel C. E. Callwell. Nation in Arms. March.

The Employment of "Ski" in Various Armies. I.R. (Beiheft 116). 1910, p. 1.

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Mechanical Transport and its Adoption for Military Purposes (conclusion). By Baron E. von. der Ropp. V.S. (I), No. 1, 1910, p. 143; (I), No. 2, 1910, p. 135.

PART II.

SECTION III.

BOOKS, PAMPHLETS, &c., WHICH HAVE BEEN DISTRIBUTED TO REFERENCE LIBRARIES.

Report of Staff College Entrance Examination, August, 1909.

Russo-Japanese War, Official History, Part IV.

Statistical and General Report of the Army Veterinary Service in India for 1908-09.

Examination Papers used at the Examination in Foreign Languages held in January, 1910.

ABBREVIATIONS.

Abbreviation.	Name of Newspaper or Periodical.		Price.	Place of Publication.
A.F.	Bulletin du Comité de l'Afrique française	M.	2 frs.	Paris.
A.F.H.	Archiv für Schiffs- und Tropen-Hygiene	½ M.	*	Leipzig.
A.H.M.	Annales d'hygiène et de médecine coloniale	M.	3 frs.	Paris.
A.J.	Artilleriskii Jurnal	M.	*	St. Petersburg.
A.M.B.	Artilleristische Monatshefte	M.	m.2.50	Berlin.
A.M.P.	Archives de médecine et de pharmacie militaires	M.	2 frs.	Paris.
A.M.S.	Proceedings of the Aldershot Military Society	...	/6	London.
A.N.R.	Army and Navy Register	W.	15 c.	Washington.
A.Q.R.	Imperial and Asiatic Quarterly Review	Q.	2/6	Woking.
A.S.C.	Army Service Corps Quarterly	Q.	2/-	Aldershot.
A.S.M.	Allgemeine schweizerische Militärzeitung	W.	*	Basle.
B.A.	Broad Arrow	W.	/6	London.
B.Mag.	Blackwood's Magazine	M.	2/6	Edinburgh.
B.M.J.	British Medical Journal	W.	/6	London.
B.P.B.M.	Bulletin de la Presse et de la Bibliographie militaires. (Supplement to J.M.O.B.)	F.	*	Brussels.
B.S.C.	Bulletin international des sociétés de la croix rouge	M.	50 c.	Geneva.
B.U.	Bibliothèque Universelle	M.	2.50frs	Lausanne.
	Budgets of Foreign Countries			
C.J.	Cavalry Journal	Q.	2/6	London.
C. Mag.	Canadian Magazine	M.	25 c.	Toronto.
C.M.G.	Canadian Military Gazette	F.	10 c.	Montreal.
C.O.J.	Colonial Office Journal	Q.	1/6	London.
Con.	Der Continent	M.	m.1.25	Berlin.
C.R.	Contemporary Review	M.	2/6	London.
D.M.S.	De militaire Spectator	M.	1 fr. 50	Haarlem.
D.M.Z.	Deutsche militärärztliche Zeitschrift	½ M.	*	Berlin.
E.	Engineering	W.	/6	London.
Ec.	Economist	W.	/8	London.
Emp. R.	Empire Review	M.	1/-	London.
E.R.	Edinburgh Review	Q.	6/-	London.
F.M.F.	Feuille militaire Fédérale	V.	40 c.	Berne.
F. Rev.	Fortnightly Review	M.	2/6	London.
I.J.	Intendanski Jurnal	M.	*	St. Petersburg.
I.M.T.	Indisch Militair Tijdschrift	M.	1 fr. 50	Batavia.
Inj.	Injeniernii Jurnal	M.	*	St. Petersburg.
I.R.	Internationale Revue (Armeen und Flotten)	M.	m.3.25	Dresden.
J.A.M.S.	The Military Surgeon. Journal of the Assoc. of Military Surgeons	M.	35 c.	Carlisle, Penn.
J.A.S.	Journal of the African Society	Q.	6/-	London.
J.D.A.M.	Jahrbücher für die Deutsche Armee und Marine	M.	m.2.50	Berlin.
J.M.O.B.	Journal militaire Officiel	M.	*	Brussels.
J.M.S.I.	Journal of the Military Service Institution	2 M.	50 c.	Governor's Island, N. York
J.M.S.S.	Journal of the Military Scientific Society (Russian)	Q.	1 Ro. 50kop.	St. Petersburg.
J.R.A.M.	Journal of the Royal Army Medical Corps	M.	2/-	London.
J.R.C.I.	Journal of the Royal Colonial Institute	M.	/6	London.
J.S.M.	Journal des Sciences militaires	½M.	*	Paris.
J.U.S.I.	Journal of the Royal United Service Institution	M.	2/-	London.

W., published weekly; F., fortnightly; M., monthly; Q., quarterly; V., at irregular intervals; A., annually.

* Periodicals which can only be purchased by subscription.

ABBREVIATIONS.—contd.

Abbreviation.	Name of Newspaper or Periodical.		Price.	Place of Publication.
J.U.S.I. (N.S.W.)	Journal of the United Service Institution of New South Wales	A.	*	Sydney.
K.M. ...	Kavalleristische Monatshefte	M.	k. 2.	Vienna.
K.T.Z. ..	Kriegstechnische Zeitschrift	M.	m.1.50	Berlin.
L.... ...	Lancet	W.	-/7	London.
L.A.F. ..	Comité de l'Asie française, Bulletin ...	M.	2.25frs	Paris.
L.B.M. ...	La Belgique militaire	W.	25 c.	Brussels.
L.B.I. ...	La Revue d'Infanterie	M.	2 frs.	Paris.
L.S.M. ...	Le Spectateur militaire	F.	2 frs.	Paris.
M.A.G. ...	Mittn. über Gegenstände des Art.- u. Genie-Wesens	M.	*	Vienna.
M. Art. ...	Memorial de Artillería	M.	*	Madrid
M.B.A.R.	Monthly Bulletin of the Bureau of American Republics	M.	25 c.	Washington.
M.C. ...	McClure's Magazine	M.	25 c.	New York.
M.I.E. ...	Memorial de ingenieros del ejército ...	M.	*	Madrid.
M.R. ...	Marine-Rundschau	M.	m. 2.	Berlin.
M.W.B. ...	Militär-Wochenblatt	½W.	20 pf.	Berlin.
N.C. ...	Nineteenth Century	M.	2/6	London.
N.D. ...	National Defence	Q.	1/-	London.
N.G.M. ...	National Geographic Magazine	M.	25 c.	Washington.
N.I.A. ...	Nation in Arms	M.	/3	London.
N.M.B. ...	Neue Militärische Blätter	W.	60 pf.	Berlin.
N.R. ...	National Review	M.	2/6	London.
O.M.Z. ...	Streffleurs militärische Zeitschrift, zugleich Organ der militär-wissenschaftlichen Vereine	M.	*	Vienna.
P.J. ...	Preussische Jahrbücher	M.	m.2.50	Berlin.
P.R.A.I. ...	Journal of the Royal Artillery	M.	2/6	Woolwich.
P.U.S.I. ...	Journal of the United Service Institution of India	Q.	2 Rs.	Simla.
Q.D. .	Questions diplomatiques et coloniales...	F.	75 c.	Paris.
Q.R. ...	Quarterly Review...	Q.	6/-	London
R.A.G. ...	Rivista di Artiglieria e Genio	M.	*	Rome.
R.C. ...	Revue de Cavalerie	M.	*	Paris.
R. d'A. ...	Revue d'Artillerie...	M.	*	Paris.
R.D.D.M.	Revue des Deux Mondes...	½M.	3 frs.	Paris.
R. du G....	Revue du Génie militaire	M.	2.50frs	Paris.
R.E.J. ..	Royal Engineers' Journal	M.	1/6	Chatham.
R.H. ...	Revue d'Histoire	M.	2 frs.	Paris.
R.I.C. ...	Revue Indo-Chinoise	F.	1.50frs	Hanoi.
R.I.M. ...	Revue du service de l'intendance militaire	M.	2 frs.	Paris.
R.M.B. ...	Revue de l'Armée belge	2 M	*	Liège
R.M.E. ...	Revue militaire des Armées étrangères	M.	1 fr.	Paris.
R.M.G. ...	Revue militaire générale	M.	2.50frs	Paris.
R.M.I. ...	Rivista militare italiana	M.	2 lire	Rome.
R.M.L. ...	Revista militar	F.	200 reis.	Lisbon.
R.M.S. ...	Revue militaire suisse	M.	*	Lucerne.
R.T.C. ...	Revue des Troupes Coloniales	M.	2 frs.	Paris.
S.Z.A.G. ...	Schweizerische Zeitschrift für Artillerie und Genie	M.	*	Frauenfeld.
U.S.A. ...	United States Artillery Journal... ...	2 M.	50 c.	Fort Monroe
U.S.C. ...	United States Cavalry Association Journal	Q.	50 c.	Fort Leaven- [worth
U.S.I. ...	United States Infantry Association Journal	Q.	50 c.	Washington.
U.S.M. ...	United Service Magazine (Colburn's) ...	M.	2/-	London.
V.R.K. ..	Vyestnik Russkoi Konnitsi	F.	*	St. Petersburg.
V.S. ...	Voyennii Sbornik (Military Journal) ...	M.	*	St. Petersburg
V.T.H. ...	Vierteljahrshefte für Truppenführung und Heereskunde	Q.	*	Berlin.

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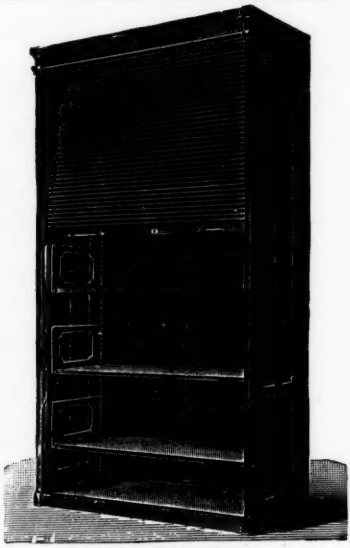

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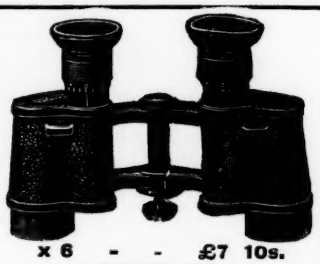

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